

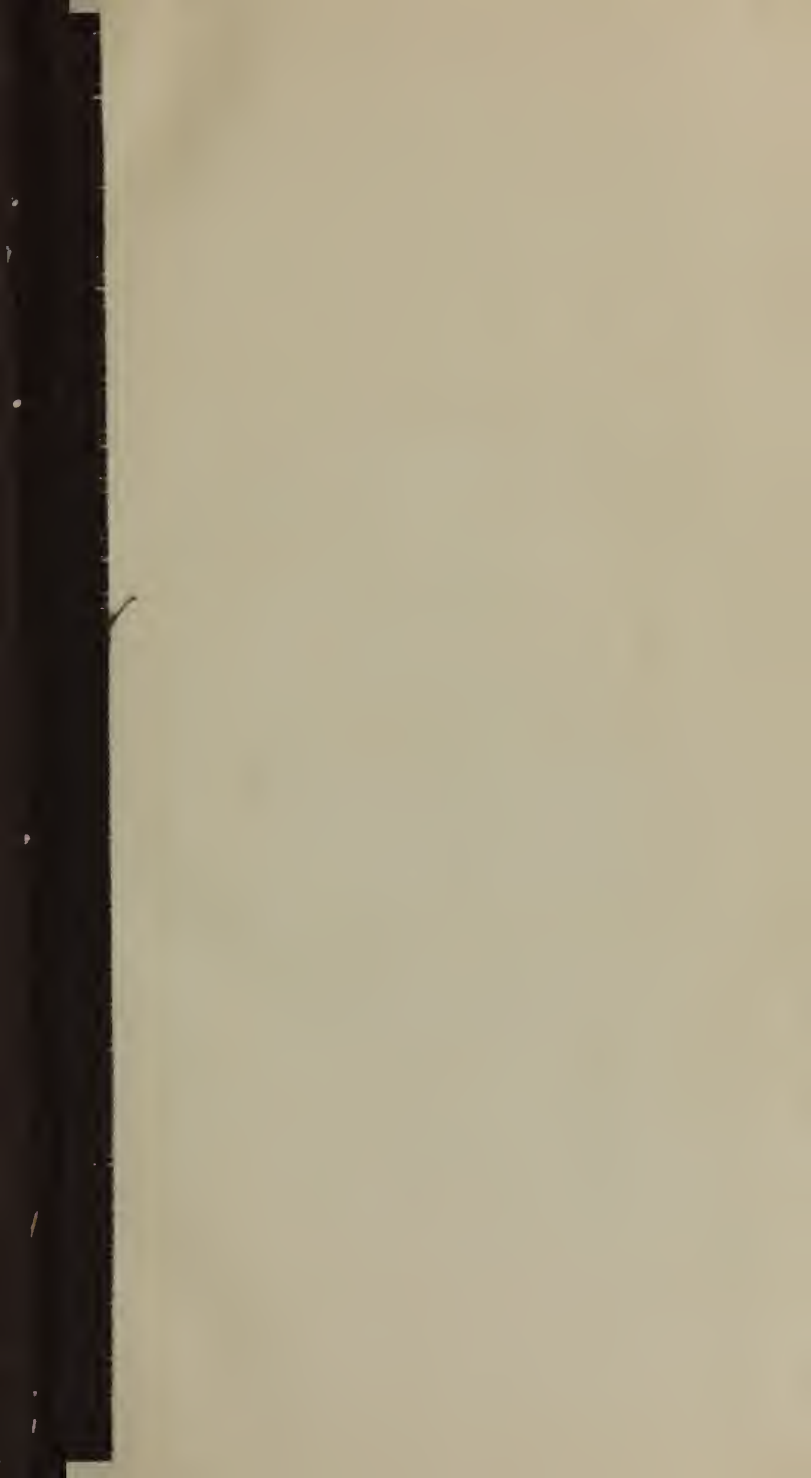
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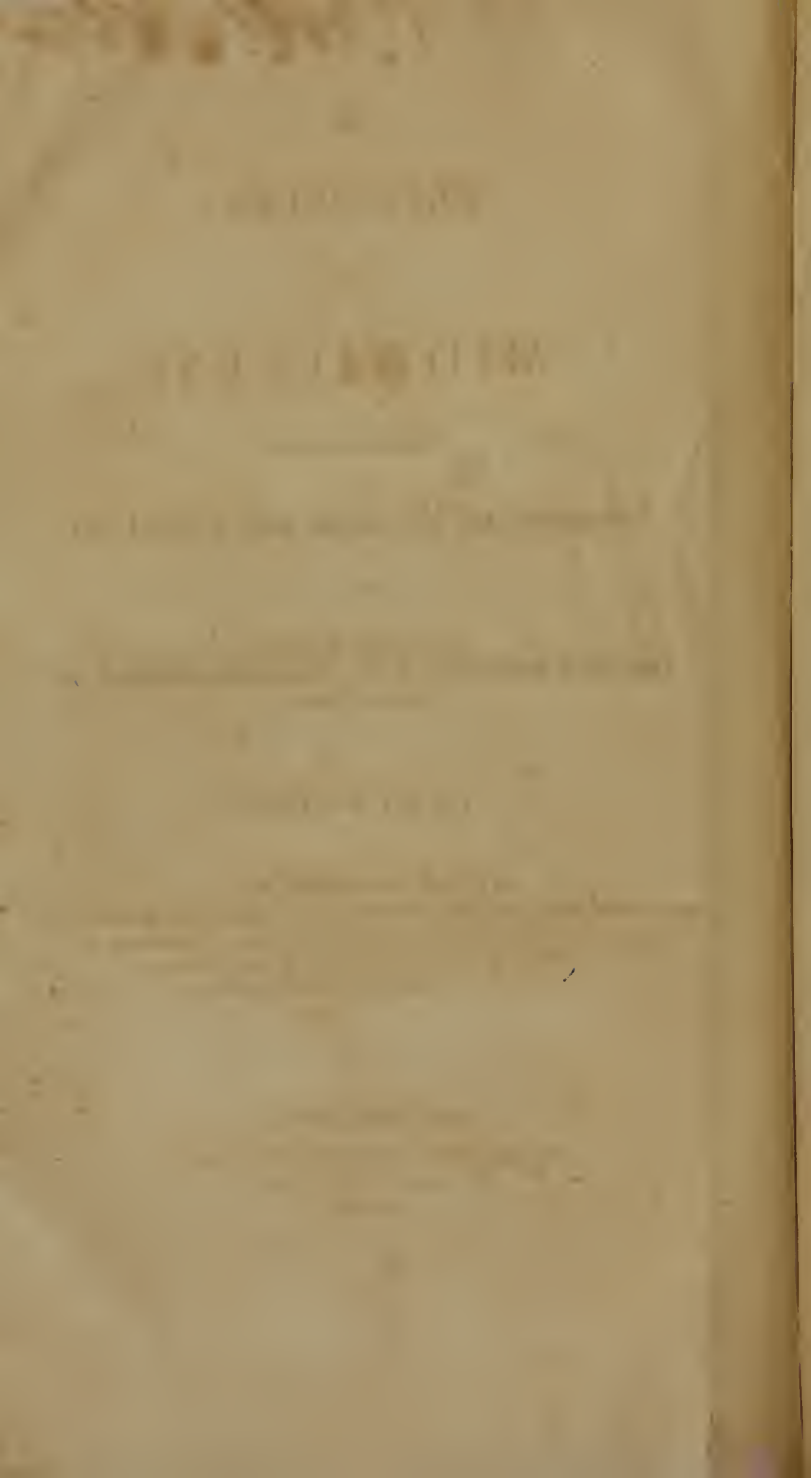


WASHINGTON, D.C.



THE

PRINCIPLES OF MIDWIFERY.



Robt. Abbott

THE
PRINCIPLES
OF
MIDWIFERY;
INCLUDING THE
Diseases of Women and Children.

✓

BY JOHN BURNS,
Lecturer on Midwifery, and Member of the Faculty of Physicians and
Surgeons, Glasgow.

WITH NOTES.

BY N. CHAPMAN, M. D.

Honorary Member of the Royal Medical Society, Edinburgh, Member of the
American Philosophical Society, and of the College of Physicians, Philadelphia; Lecturer on Midwifery and the Diseases of
Women and Children, Philadelphia, &c. &c.

1853

PHILADELPHIA:
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1810.



obstetrics.

District of Pennsylvania, to wit.

***** BE IT REMEMBERED, that on the fourth day
* SEAL. * of November, in the thirty-fourth year of the inde-
* * pendence of the United States of America, A. D.
***** 1809, Hopkins and Earle, of the said district, have
deposited in this office the title of a book, the right whereof they
claim as proprietors, in the words following, to wit:

“ The Principles of Midwifery; including the Diseases of
“ Women and Children. By John Burns, Lecturer on Mid-
“ wifery, and Member of the Faculty of Physicians and
“ Surgeons, Glasgow. With Notes. By N Chapman, M. D.
“ Honorary Member of the Royal Medical Society, Edin-
“ burgh, Member of the American Philosophical Society,
“ and of the College of Physicians, Philadelphia; Lecturer
“ on Midwifery and the Diseases of Women and Children,
“ Philadelphia, &c. &c.

In conformity to the act of the Congress of the United States,
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act, entitled ‘ An act for the encouragement of learning, by
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tioned,’ and extending the benefits thereof to the arts of de-
signing, engraving, and etching historical and other prints.”

D. CALDWELL,
Clerk of the District of Pennsylvania.

TO

BENJAMIN S. BARTON, M. D.

Professor of Materia Medica, Natural History, and Botany, in the
University of Pennsylvania, &c. &c.

My Dear Sir, .

IT is now more than twelve years since I have had the honour of being known to you. During this period, I have experienced from you many of the advantages of a warm and active friendship. Cherishing a grateful recollection of your uninterrupted kindness, I could not avoid so far obeying the impulses of my heart, as to inscribe the ensuing work to you, though I am sensible it does not come within the immediate sphere of your favourite studies. The work itself, with some defects, has undoubtedly very considerable merits. Taken as a whole, it is, indeed, decidedly superior, in my estimation, to any other treatise on the same subjects. I could wish that the slender contributions which I have made to it were, in a greater degree, worthy of your attention. But it was impossible for me, under existing circumstances, to render them more copious or interesting. Not called upon to edit the work till it was actually committed to the printers, I was only allowed, while it was urged through the press, with no ordinary eagerness for publication, to prepare my notes, "*currente calamo*," out of such materials as my previous reading, and observations had supplied.

Could I have had leisure to undertake new researches, or even to digest the information which I already possessed, with a particular reference to this object, my commentary would certainly have appeared with much higher pretensions. As it is, however, I will not relinquish altogether the pleasing expectation which I have indulged, that you will find it to contain little to object to, and something to approve. Of this I am at least assured, that whatever I may publish, will receive from you no other criticism than what is dictated by candour, justice and discernment.

With every sentiment of respect,

I remain, my dear sir,

Yours, most truly,

N. CHAPMAN.

Philadelphia, January, 1810.

PREFACE.

IN preparing this work, I have endeavoured to proceed as much as possible upon the method of induction. I have collected with care, the different cases which have been made public, as well as my own private observations. To these I have added the opinions and advices given by others, in so far as they seemed to be founded on facts, and supported by experience. From the whole, I have deduced, in the different parts of my subject, both the symptoms and the practice.

The anatomical descriptions, I have given from dissections and preparations before me whilst writing.

I intended to have added to the text, copious references to the opinions and cases contained in systems, or scattered through other publications. This would have rendered the present book, in some manner, an index to those already published, and been of considerable service to practitioners, who wished to consult them upon any particular point. But in spite of all my endeavours, this work has extended to a length, which rendered it necessary to strike out many references, and shorten the account of cases, to prevent it from swelling to a size which would have rendered it less generally useful.

Whilst I thus state the plan on which I have proceeded, I acknowledge myself deeply sensible, that its execution does

not bear any proportion to the importance of the subject; and now that it is completed, I feel disposed to question, whether the goodness of my intentions will compensate for the imperfection of my labours.

Should this work fall only into the hands of those competent to judge on their profession, it would, if faulty or deficient, do little harm. But should it ever be circulated more extensively, it must, like other systems and elements, have an influence on the opinions and future practice of the student of midwifery, and will prove useful or injurious to society, according to the correctness of the principles it contains. When I consider how important the diseases of women and children are, and how much depends on the prudent management of parturition, I feel the high responsibility which falls on those who presume to give lessons in midwifery. I do, however, sincerely trust, that the precepts I have inculcated will, in general, be found agreeable to the experience and practice of our best teachers; and, on a review of the whole, I cannot say that I have either wasted the reader's time in idle theory, or misled his opinion by mere speculation.

Glasgow, May, 1809.

THE editor deems it proper to mention that he has exercised the privilege of making some alterations in the text of his author. These, however, will be found to be neither very numerous, nor material. They amount, indeed, to little more than the mere correction of those errors, defects, and crudities, which, perhaps, to a certain degree, are unavoidable in the first edition of every work, and especially, if it be printed as he has ascertained the present one was, remote from the author, and without the aid of his careful revision. The editor cannot dismiss the work without very strenuously re-

commending it to the attention of all those who are studious to acquire a knowledge of the subjects of which it treats. It will hereafter be adopted as the Text Book to the Lectures delivered by Dr. James and himself on Midwifery, and the Diseases of Women and Children.

Philadelphia, January, 1810.

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THE
PRINCIPLES
OF
MIDWIFERY.

BOOK I.

Of the Structure, Functions, and Diseases of the Pelvis and Uterine System, in the unimpregnated state, and during gestation.

CHAPTER I.

Of the Bones of the Pelvis.

SECTION FIRST.

THE practical precepts, and rules in Midwifery, are easily understood, and readily acquired. They arise evidently from the structure and actions of the parts concerned in parturition; and whoever is well acquainted with this structure and these actions, may, from such knowledge, deduce all the valuable and important directions which constitute the Practice of Midwifery.

One of the first, and not the least important, of those parts concerned in parturition, is the pelvis, which must be examined, not only on account of its connexion with the uterus and vagina, but also on account of its own immediate relation to the delivery of the child, and the obstacles which, in many instances, it opposes to its passage.

The pelvis consists, in the full grown female, of three large bones, two of which are very irregular, having no near resemblance to any other object; on which account they have been called the ossa innominata. These form the sides and front of the basin or pelvis. The back part consists of a triangular bone, called the os sacrum, to the inferior extremity or apex of which, is attached, by a movable articulation, a small bone, which, from its supposed resemblance to the beak of a cuckoo, has been named the os coccygis.

The os innominatum, at first, consists of three separate pieces: the upper portion is called the ilium, or haunch bone; the under portion the ischium, or seat bone; and the anterior division, which is the smallest of the three, is called the os pubis, or share bone. These all join together in the acetabulum, or socket formed for receiving the os femoris, and are connected by a very firm gristle or cartilage. This, before the age of puberty, is converted into bone, so that the three different pieces are consolidated into one, though the names given to the bones originally are still applied to the different parts of the united os innominatum.

The sacrum also, which seems to consist only of one curved triangular bone, is really made up of several pieces, which, in the child, are nearly as distinct as the vertebræ, to which, indeed, they bear such a resemblance, that they have been considered as a continuation of them; but from their imperfect structure, and subsequent union, they have been called the false vertebræ.

The bones of the pelvis are firmly joined together, by means of ligaments and intermediate cartilages, and form a very irregular canal, the different parts of which must be briefly mentioned.

SECTION SECOND.

When we look at the pelvis, we observe, that the ossa innominata naturally divide themselves into two parts, the upper of which is thin and expanded, irregularly convex on its dorsum or outer surface, hollow on the inside, which is called the costa, and bounded by a broad margin, extending in a

semicircular direction from before backwards, which is called the crest of the ilium. The under part of the os innominatum is very irregular, and forms, with the sacrum, the cavity of the pelvis. The upper expanded part has little influence on labour, and serves, principally, for affording attachment to muscles. In the under part, we have several points to attend to.

1st. The upper and under parts form an angle with each other, marked by a smooth line, which is a continuation of the margin of the pubis, or anterior part of the bone. It extends from the symphysis pubis, all the way to the junction of the os innominatum with the sacrum, and is called the *linea iliopectinea*. It is quite smooth and obtuse at the sides, where the two portions form an angle; but at the anterior part, where the upper portion is wanting, it is sharp, and sometimes as thin as the blade of a knife.

2d. The upper portion is discontinued exactly about the middle of this line, or just over the acetabulum; and at the termination, there is from this portion an obtuse projection overhanging the acetabulum, which is called the inferior spinous process of the ilium, to distinguish it from a similar projection about half an inch higher, called the superior spine.

3d. The under part of the bone is of the greatest importance, and in it we recognise the following circumstances. Its middle is large, and forms on the outside a deep cup or acetabulum, for the reception of the head of the thigh bone. On the inside, and just behind this cup, it forms a smooth polished plate of bone within the cavity of the pelvis, which is placed obliquely with regard to the pubis, and has a gentle slope forward. The vertex of the child's head, in labour, moves downwards, and somewhat forwards, on this, as on an inclined plane; it may be called the plane of the ischium, although a part of it be formed by the ilium.

4th. Standing off from the back part of this, about two inches beneath the *linea iliopectinea*, is a short projection, called the spine of the ischium, which seems to encroach a little on the cavity of the pelvis, and is placed, with regard

to the pubis, still more obliquely than the plane of the ischium. It must, consequently, tend to direct the vertex, as it descends, still more towards the pubis.

5th. Beneath this, the ischium becomes narrower, but not thinner; on the contrary, it is rather thicker, and terminates in a rough bump, called the tuberosity of the ischium.

6th. Next, we look at the anterior part of the bone, and find, that just before the plane of the ischium, there is a large hole in the os innominatum. This is somewhat oval in its shape; and at the upper part within the pelvis, there is a depression in the bone, which, if followed by the finger or a probe, leads to the face of the pelvis. The hole is called the foramen thyroideum.

7th. Before this hole the two ossa innominata join, but form with each other, on the inside, a very obtuse angle, or a kind of smooth rounded surface, on which the bladder partly rests. The junction is called the symphysis of the pubis.

8th. The two bones, where they form the symphysis, are joined with each other for about an inch and a half; then they divaricate, forming an angle, the limbs of which extend all the way to the tuberosity of the ischium. This separation or divarication is called the arch of the pubis, which is principally constructed of the anterior boundary of the foramen thyroideum, consisting of a column or piece of bone, about half an inch broad, and one fourth of an inch thick, formed by the union of the ramus of the pubis, and that of the ischium.

9th. At the upper part of the symphysis, or a very little from it, the os innominatum has a short obtuse projection, called the crest of the pubis, into which Poupart's ligament is inserted; and from this there runs down obliquely, a ridge on the outside of the bone, which reaches all the way to the acetabulum, and overhangs the foramen thyroideum.

10th. When we return to the back part of the os innominatum, we find, that just after it has formed the plane of the ischium, it extends backwards to join the sacrum, but in doing so it forms a very considerable notch or curve, the concavity of which looks downwards. When the sacrum is joined to

the bone, this notch is much more distinct. It is called the sacrosciatic notch or arch: for one side is formed by the ischium, and is about two inches long; the other is formed chiefly by the sacrum, and is about half an inch longer. In the recent subject, strong ligaments are extended at the under part, from the one bone to the other; so that this notch is converted into a regular oval hole.

11th. Lastly, this notch being formed, the bone expands backwards, forming a very irregular surface for the articulation with the sacrum; and the bones being joined, we find that the *os innominatum* forms a strong, thick, projecting ridge, extending farther back than the spinous processes of the sacrum. This ridge is about two inches and three quarters long, and is a continuation of the crest of the ilium, but is turned downwards; whereas were the crest continued in its former course, it would meet with the one from the opposite side, behind the top of the sacrum, forming thus a neat semicircle; but this ridge, if prolonged on both sides, would form an acute angle, the point of junction being opposite the bottom of the sacrum. From this ridge strong ligaments pass to the sacrum, to join the two bones.

SECTION THIRD.

The sacrum forms the back part of the pelvis. It is a triangular bone, and gently curved; so that, whilst a line drawn from the one extremity to the other, measures, if it subtend the arch, about four inches; it will, if carried along the surface of the bone, measure full half an inch more. The distance betwixt the first or straight line, and the middle of the sacrum is about one inch. The breadth of the base of the sacrum, considered as an angular body, is full four inches: the centre of this base is shaped like the surface of the body of one of the lumbar vertebræ with the last of which it joins, forming however, an angle with it, called the great angle, or promontory of the sacrum. From this the bone is gently curved outward on each side, toward the sacroiliac junction, contributing to the formation of the brim of the pelvis.

The upper half of the side of the bone is broad and irregular for articulation with the os innominatum. The anterior surface of the bone is smooth and concave; but often we observe transverse ridges, marking the original separation of the bones of the sacrum. Four pair of holes are found disposed in two longitudinal rows on the face of the sacrum, communicating with the canal which receives the continuation of the spinal marrow; through these the sacral nerves issue. These holes slope a little outward, and betwixt the two rows is the attachment of the rectum. The posterior surface of the bone is very irregular; and, we observe, 1st. The canal extending down the bone, for receiving the continuation of the spinal marrow. 2d. At the upper part of this are two strong oblique processes, which join with those of the last lumbar vertebra. 3d. On a central line down the back of the canal, there is an irregular ridge analogous to the spines of the vertebræ. 4th. The rest of the surface is very irregular and rough; and we observe, corresponding to the holes for transmitting the sacral nerves on the exterior surface, the same number of foramina on this posterior surface, but in the recent subject they are covered with membrane, leaving only a small opening for the exit of nervous twigs.

The coccyx is an appendage to the sacrum, and as it is inclined forwards from that bone, the point of junction has been called the little angle of the sacrum. It is, at first, altogether cartilaginous and cylindrical in its shape, but it gradually ossifies and becomes flatter, especially at the upper part, which has been called its shoulder. In men it is generally ankylosed with the sacrum, or at least moves with difficulty, but it almost always separates by maceration. In women it remains mobile, and during labour is pressed back so as to enlarge the outlet of the pelvis. By falls or blows it may be luxated; and if this be not discovered, and the bone replaced, suppuration takes place about the rectum, and the bone is discharged.

CHAPTER II.

Of the articulation of the Bones of the Pelvis, and their occasional separation.

SECTION FIRST.

THE bones of the pelvis are connected to each other, by intermediate cartilages, and by very strong ligaments. The ossa innominata are united to each other at the pubis, in a very strong and peculiar manner. It was supposed that they were joined together by one intermediate cartilage; but Dr. Hunter* was, from his observation, led to conclude that each bone was first of all covered at its extremity with cartilage, and then betwixt the two was interposed a medium like the intervertebral substance which united them. This substance consists of fibres disposed in a transverse direction.

M. Tenon† has lately published an account of this articulation; and is of opinion, that sometimes the one mode and sometimes the other obtains. I am inclined to think, that Dr. Hunter's description is applicable to the most natural state of the part; but we often in females find that the intermediate fibrous substance, especially at the posterior part, is absorbed, and its place supplied with a more fluid substance: or, on the contrary, ankylosis may sometimes take place; a circumstance, which Dr. Hunter says he never saw, but which I have met with. Besides this mode of connexion, there is also in addition a very strong capsule to the articulation, the symphysis being covered on every side with ligamentous fibres, which contribute greatly to the strength of the parts.

SECTION SECOND.

The ossa innominata are joined to the sacrum by means of a thin layer of cartilaginous substance, which covers each bone; that belonging to the sacrum is the thickest: both

* Vide Med. Obs. and Inq. Vol. II. p. 333.

† Vide Mem. de l'Institut des Sciences, tome VI. p. 178.

are rough, and betwixt them is found a soft yellowish substance in small quantity. The connexion of the two bones, therefore, so far as it depends on this medium, cannot be very strong; but it is exceedingly strengthened by ligamentous fibres, which serve as a capsule; and behind, several strong bands pass from the ridge of the ilium, to the back of the sacrum: sometimes the bones are united by ankylosis. At the lower part, additional strength is obtained by two large and strong ligaments, which pass from the ischium to the sacrum; and therefore are called the sacrosciatic ligaments. The innermost of these arises from the spine of the ischium, is very strong, but at first not above a quarter of an inch broad; it gradually expands, however, becoming at its insertion about an inch and a quarter in breadth. It passes on to the sacrum, and is implanted into the lower part of the side of that bone, and the upper part of the coccyx. It converts the sacrosciatic notch into a regular oval hole, the inferior end of which, owing to the neat expansion of the ligament, is as round and exact as the upper. As it makes a similar expansion downwards, there is a kind of semilunar notch formed betwixt it and the coccyx. The outer ligament may be said to arise from the side of the sacrum, and, like the other, is broad at that part. It runs for some time in contact with the inner ligament, and parallel to it; but afterwards it separates, passing down to be inserted in the tuber ischii; and when the ligaments separate, their surfaces are no longer parallel to each other. There is, in consequence of this separation, a small triangular opening formed betwixt the ligaments; or rather there is an aperture like a bow, the string being formed by the under ligament, and the arch partly by the spine of the ischium, and partly by the upper ligament.

SECTION THIRD.

The pelvis is joined to the trunk above, by means of the last lumbar vertebra; to the extremities below, by the insertion of the thigh bones into the acetabula; and it is so placed, that when the body is erect, the upper part of the

sacrum and the acetabula are nearly in the same line; The brim of the pelvis, then, is neither horizontal nor perpendicular to the horizon, but oblique, being placed at an angle of 35 or 40 degrees. Were the ligaments of the pelvis loosened, there would, from this position, be a tendency in the sacrum to fall directly towards the pubis, the ossa innominata receding on each side. But the structure of the part adds greatly to the power of the ligaments; for it is to be observed, that in standing, and in various exertions of the body, the limbs react on the pelvis; and the heads of the thigh bones pressing on the two acetabula, force the ossa innominata more closely on each other at the symphysis, and more firmly on the sacrum behind. It is not possible, indeed, to separate the bones of the pelvis, unless the connecting ligaments be diseased, or external violence be applied, so as to act partially or unequally on the pelvis.

SECTION FOURTH.

By external violence, the symphysis has been wrenched open, as was the case with Dr. Greene;* or the sacro-iliac junction may be separated, as in the case of the young peasant, related by M. Louis.†

By some morbid affection of the symphysis, it may yield and become loosened during pregnancy, or may be separated during labour. Some have been inclined to consider this as an uniform operation of nature, intended to facilitate the birth of the child. Others, who cannot go this length, have nevertheless conjectured, that the ligaments do become somewhat slacker; and have grounded this opinion on the supposed fact of the pelvis of quadrupeds undergoing this relaxation. But the truth is, that this separation is not an advantage, but a serious evil; and in cases of deformed pelvis, where we would naturally look for its operation, did it really exist, we do not observe it to take place.

* Phil. Trans. No. 484.

† Vide Mem. de l'Acad. de Chir. tome IV. p. 63.

When a person stands, pressure is made upon the symphysis, as I have already noticed; and therefore, if it be tender, pain will then be felt. When a person walks, pressure is made on the two acetabula alternately, and the ossa innominata are acted on by the strong muscles which pass from them to the thighs, so that there is a tendency to make the one os pubis rise above the other; but this, in a sound state of the parts, is sufficiently resisted by the ligaments. In a diseased state, however, or in a case of separation of the bones, there is not the same obstacle to this motion; and hence, walking must give great pain, or be altogether impossible: even attempts to raise the one thigh above the other, in bed, must give more or less pain, according to the sensibility or laxity of the symphysis. Standing has also an effect on the symphysis, as I have mentioned; but sometimes the person can, by fixing one os innominatum, with all the muscles connected with it, and throwing the chief weight of the body to that side, stand for a short time, easier on one leg than on both. This is the case when one os innominatum has been more acted on than the other, at the sacro-iliac junction. The person can stand easiest on the soundest side.

From these observations, we may learn the mischievous consequences of a separation of the bones, and also the circumstances which will lead us to suspect that it has happened. If the bones be fully disjoined, then, by placing the finger on the inside of the symphysis, and the thumb on the outside, we can readily perceive a jarring, or motion, on raising the thigh.

It is well known to every practitioner, that owing to the distension of the muscles during pregnancy, very considerable pain is sometimes felt at the insertion of the rectus muscle into the pubis; and it is also known, that sometimes, in consequence of pregnancy, the parts about the pelvis, and especially the bladder and urethra, and even the whole vulva, may become very irritable. This tender state may be communicated to the symphysis; or some irritation, less in degree than that I have mentioned, may exist, which, in particular cases, seems to extend to the articulation, producing

either an increased effusion of interstitial fluid in the intermediate cartilage, and thus loosening the firm adhesion of the bones, or a tenderness and sensibility of the part, rendering motion painful. In either case, exertion may produce a separation; and certainly, in some instances, has done so. The separation is always attended with inconvenience, and often with danger, especially when it occurs during parturition; for abscess may take place, and the patient sink under hectic fever, or inflammation may be communicated to the peritoneum, and the patient die in great pain.

WHEN the accident happens during gestation, it sometimes takes place gradually, in consequence of an increasing relaxation of the articulation, from slow but continued irritation. In the other instances, it shows itself suddenly after some exertion. In either case, rest, and attempts by the application of a broad firm bandage round the pelvis, to retain the bones together, are the chief points in the practice. So far as I have been able to learn, a woman who has had this separation in one pregnancy, is not in general peculiarly liable to a return of it in a subsequent pregnancy, though there may be particular exceptions to this observation. (1) It may occur so early as the second, or so late as the ninth month of gestation. When it happens during parturition, it sometimes takes place in a pelvis apparently previously sound; but in most instances, we have, during some period of gestation, symptoms of disease about the symphysis; and so far from making labour easier, the woman often suffers more, when the symphysis is previously relaxed. The same means used in the former case are to be rigidly employed, and the woman should keep her thighs together, and lie chiefly on her back. If the separation have been slight, reunion may take place in a few weeks, sometimes in a month; (2)

(1) Dr. Denman mentions an instance, where the patient, in three succeeding pregnancies, was progressively worse, and did not, until the lapse of eight years, recover from the lameness produced by the third delivery. *Introd. Vol. I. p. 16.*

(2) In one case, where the symphysis was divided, the patient was able to walk on the 15th day.—In Dr. Smollet's case, although in the 8th month

but if a great injury have been sustained, it may be many months, perhaps years, before recovery be completed; and in such cases, it is probable, that at last, an anchylosis is sometimes formed.

Either owing to the violence of the accident, or the peculiar state of the parts, it sometimes happens, that inflammation takes place to a very considerable degree in the symphysis; but it is to be remarked, that the symptoms are by no means uniformly proportioned in their severity to the degree of the separation. Inflammation is known by the accession of fever, with acute pain about the lower part of the belly, greatly increased by motion, and succeeding to the former symptoms; or, sometimes, from the first, the pain is very great, and not unfrequently it is accompanied with sympathetic derangement of the stomach and bowels, such as vomiting, nausea, looseness, &c. Presently matter forms, and a well marked hectic state takes place. The patient is to be treated, at first, by the usual remedies for abating inflammation, such as general and local evacuation of blood, fomentations and laxatives. When matter is formed, we must carefully examine where it is most exposed, and let it out with a small puncture. (3)

of gestation, the bones were found to rise above each other, yet the woman recovered in two months after delivery. Smellie, Vol. II. coll. 1. n. i. c. 2.

(3) As an illustration of this disease, I shall relate the outlines of a case mentioned by Louis, in the Memoirs of the Royal Academy of Surgery. A woman in the second month of her pregnancy, after pressing in a drawer with her foot, felt a considerable pain at the lower part of the belly, greatly increased by every change of posture, and along with this she complained of strangury. She was bled and purged, and kept at rest, by which means, especially by the last, she grew better. But in the two latter months of pregnancy, the symptoms were renewed, so that presently she could neither walk nor even turn in bed without great pain; but her greatest suffering was caused by raising the legs to pull on her stockings, as then the bones were more powerfully acted on. A slight degree of hectic fever now appeared. Her delivery was accomplished easily; but on the evening of the 3d day, when straining at stool, after having received a clyster, the pains, which had troubled her little since her labour, returned with as much severity as ever. On the 5th day the pulse was very weak and frequent, she sweated profusely, and had a wildness in her countenance, with symptoms

The inflammation may be communicated to the peritoneum producing violent pain in the lower belly, tumefaction and fever, which almost uniformly prove fatal; though frequently the patient lives until abscess takes place in the cellular substance within the pelvis. If any thing can save the patient, it must be the prompt use of blood-letting and blisters.

In almost every case of separation of the pubis, considerable pain is felt in the loins, even although the junction at the sacrum be entire, and the ossa pubis be very little asunder. But when the separation is complete, and in any way extensive, then the articulation of the sacrum with the ossa innominata, (4) especially with one of them, is more injured, (5) and the person is lame in one or both sides, and has acute pain about the posterior ridge of the ilium, (6)

of approaching delirium. In the afternoon the pulse became full and tense, with vertigo and throbbing of the arteries of the head. The pain at the symphysis was excruciating, and although she was fomented and bled seven times, she obtained no relief. On the 8th day the pain abated, but diffused itself over the rest of the pelvis, particularly affecting the left hip and the sacrum. On the 11th day she died. On opening the body, there was found a separation of the bones at the pubis, but the capsule was entire, and much distended. It contained about an ounce and a half of matter. Whether the timeous evacuation of this matter might have saved the patient, is a question worth our consideration. I am disposed to answer it in the affirmative, from observing, that wherever the patient has recovered in such circumstances, it has uniformly happened that a discharge of matter has taken place.

(4) Dr Laurence showed Dr. Smellie a pelvis, where all the bones were separated to the extent of an inch.

(5) In a case related by De la Malle, the pain did not appear till the 14th day after delivery, and was felt first in the groin. The patient was unable to move the leg, and had acute fever, which proved fatal. The sacrum was found separated, three lines from the ilium.

In the operation of dividing the pubis in a parturient woman, it was found that one side yielded more than the other, and consequently that side would suffer most at the sacrum. Baudelocque *L'Art, &c.* section 2063.

(6) Dr. Smellie relates an instance, where, during labour, the woman felt violent pains at the right sacro-iliac symphysis. On the 5th day this pain was extremely severe, and attended with acute fever; but the symptoms were abated by blood-letting, and a clyster and fomentations, which

and in the course of the psoas and glutei muscles. The general principles of treatment are the same as in the former case. When suppuration takes place about the sacro-iliac articulation, the danger is greatly increased. In all cases of separation, when the patient has recovered so far as to be able to move, the use of the cold bath accelerates the cure; the general health is to be carefully attended to, and any urgent symptom supervening, is to be obviated by suitable remedies.

CHAPTER III.

Of the soft parts which line the Pelvis.

SECTION FIRST.

VARIOUS, strong, and large muscles, pass from the spine and pelvis to the thigh bones. These act as powerful bands, strengthening, in a very great degree, the articulations of the pelvis. These it is not requisite to describe, but it will be useful, briefly to notice those soft parts which line the pelvis, and which may be acted on by the child's head during labour.

1st. When we remove the peritoneum from the cavity of the pelvis, we first of all are led to observe, that all the under portion of the os innominatum, and part of the sacrum, is covered with a layer of muscular fibres, which arises at the brim of the pelvis, and can be traced all the way down to the extremity of the rectum. This is the levator ani; it is a strong muscle, with many glossy tendinous fibres, especially at the fore part, where it lines the ossa pubis. Under the symphysis, it is pierced by the urethra and vagina; and during the

produced a copious perspiration. She was not able to walk for five or six months without crutches, but was restored to the use of the limb, by means of the cold bath. Coll. 1. n. i. c. 1.

When uneasiness is felt at the pubis, or about the pelvis during gestation, and there is an apprehension that the bones may separate, it will be proper to bleed the patient occasionally, which may prevent the accident.

passage of the child's head, those fibres which surround the vagina must be considerably distended; and this is more readily effected, as the anus is brought forwards when the perinæum is distended.

2d. Under this, on each side, we have arising from the membrane that fills up the thyroid hole, and also from the margins of the hole and inner surface of the ischium, the obturator internus, which forms at that part a soft cushion of flesh, the fibres running backwards and downwards, and terminating in a tendon, which passes over the sacro-sciatic notch, running on it as on a pulley, in order to reach the root of the great trochanter.

3d. We find the pyriformis arising from the under part of the hollow of the sacrum, and also passing out at the notch, to be inserted with the obturator; and in laborious parturition, the injury or pressure which these muscles sustain, is one cause of the uneasiness felt in moving the thighs.

4th. From the spine of the ischium, originates the coccygeus, which runs backward to be inserted into the side of the coccyx, in order to move and support it. This gradually becomes broader, as we recede from its origin, and is spread on the inside of the sacro-sciatic ligament. Thus the cavity of the pelvis is lined with muscular substance, whose fibres are disposed in a very regular order, and which are exhibited when the peritoneum and its cellular substance are removed.

5th. When we look at the upper part of the os innominatum, we find all the hollow of the ilium occupied with the iliacus internus, the tendon of which passes over the fore part of the pelvis, to reach the trochanter of the thigh. Part of this muscle is covered by the psoas which arises from the lumbar vertebræ, and passes down by the side of the brim of the pelvis to go out with the former muscle: though just upon the brim, it does not encroach on it, so as perceptibly to lessen the cavity. These muscles afford a soft support to the intestines and gravid uterus.

SECTION SECOND.

Running parallel with the inner margin of the psoas muscle, and upon the brim of the pelvis, along the posterior

half of the linea iliopectinea, we have the iliac artery and vein; the artery lying for the upper half of its course above the vein, and for the under half on the outside of it: when filled, they, especially the vein, encroach a little on the brim. About three inches from the symphysis, they quit the brim running rather more outward, over the part which forms the roof of the acetabulum, and pass out with the psoas muscle. The great lash of arteries and veins connected with the pelvis, and inferior extremities, is placed on the sacro-iliac junction. The iliac vessels are so situated, that they escape pressure during labour, when the head enters the cavity of the pelvis; but the hypogastric vessels must be more or less compressed, according to the size or position of the head, but the circulation is never interrupted.

SECTION THIRD.

When we attend to the nerves, we find, 1st. Upon the ilium, at least four branches of cutaneous nerves, traversing the iliac, and psoas muscles, in order to pass out below Poupart's ligament. The largest of these cutaneous nerves is the outermost, which has its exit towards the spine of the ilium. These nerves which supply chiefly the skin of the thigh, cannot suffer during labour; but sometimes may, from the position of the child, or the inclination of the uterus, sustain pressure, during gestation, and occasion numbness and anomalous sensations in the thigh. 2d. Between the two muscles, and in part covered by the outer margin of the psoas, is the anterior crural nerve, which is formed by the second, third, and fourth lumbar nerves. It is of considerable size, and has a greater share than the others, in producing the uneasy sensations I have mentioned. 3d. Running parallel with the brim of the pelvis, but three quarters of an inch below it, in the cavity of the pelvis, is the obturator nerve, coming from the third lumbar, and which may be traced all along the side of the ilium to the thyroid hole. In many cases, it cannot fail, during labour, to be pressed on by the head. 4th. Beneath the vessels at the sacro-iliac junction, we have the great nerves which form the sciatic nerve.

which is made up of the fourth and fifth lumbar nerves, and the first sacral nerve, which is as large as either of the former: to these are added the second and third sacral, which are much smaller. The fourth lumbar nerve passes down on the sacro-iliac junction, and is quite covered with the vessels. The fifth traverses that curved part of the sacrum, which lies betwixt its promontory and side; like the former, it is hid by the vessels. In going to form the sciatic nerve, the fourth lumbar nerve passes under the gluteal artery, or the common trunk of the gluteal and ischiatic arteries, and the fifth passes over it. The first sacral nerve passes along the upper margin of the pyriform muscle, to join with these at the sacro-sciatic notch. There a large plexus is formed, which, uniting into a single trunk, passes out, and is the largest nerve in the body. The lumbar nerves may be pressed on early in labour; but from the cushion of vessels and cellular substance which defends them, they suffer little. When the head has descended lower, and is beginning to turn, the first sacral nerve may be compressed. Pressure of the nerve produces pain, numbness, and cramp in the thigh and leg. Different nerves are acted on in different stages of labour. In the very beginning, the anterior crural nerve may be irritated or gently compressed, producing pain in the fore part of the thigh; next the obturator, producing pain in the inside; and last of all, the back part suffers from the pressure on the ischiatic nerve. 5th. The second and third sacral nerves are small, compared to the first. They are covered by the pyriformis muscle, but part of them pierce it, forming a plexus, which joins the sciatic nerve, and sends twigs to the bladder, rectum, &c. This plexus may be pressed in the last stage of labour; and the irritation thus produced may be one cause of the passage of the fæces, which generally take place involuntarily. 6th. The fourth sacral nerve is altogether devoted to the extremity of the rectum, and its vicinity.

The great plexus, forming the sciatic nerve, as it lies in the sacro-sciatic notch, yields to any pressure it may receive, and cannot suffer in labour, at least, so as to cause inconvenience; but the nerves going to it may suffer, and the person

not only have cramp and pain during labour, but palsy and lameness for a long time afterwards. Friction, and the warm bath, at first may relieve the pain; and then the cold bath may, with much advantage, be employed for perfecting the cure.

SECTION FOURTH.

The lymphatics in the upper part of the pelvis follow the course of the iliac vessels, forming a large and very beautiful plexus, from Poupart's ligament to the lumbar vertebræ. These are out of the way of pressure during labour. Numerous glands accompany them, which are sometimes enlarged by disease, but they do not interfere with parturition. The lymphatics of the cavity of the pelvis have glands, in the course of the vagina and rectum; and these, if enlarged, may impede delivery.

CHAPTER IV.

Of the Dimensions of the Pelvis.

SECTION FIRST.

THE pelvis has been divided into the great and the little, the first being formed by the expansion of the ilia, and the second comprehending all that part which is called the cavity of the pelvis, and which lies below the linea ilio-innominata. The cavity of the pelvis is the part of the chief importance in midwifery, and consists of the brim or entrance, the cavity itself, and the outlet. The brim of the pelvis has no regular shape, but approaches nearer the oval than any other. The short diameter of this extends from the symphysis of the pubis to the top of the sacrum. This has been called the conjugate, or antero-posterior diameter, and measures four inches. The lateral diameter measures five inches and a quarter; and the diagonal diameter, or a line drawn from the sacro-iliac symphysis to the opposite acetabulum, measures five inches and an eighth; but as the psoæ muscles,

and iliac vessels, overhang the brim a very little at the side, the diagonal diameter in the recent subject appears to be the longest. From the sacro-iliac symphysis to the crest of the pubis, on the same side, is four inches and a half. From the top of the sacrum, to that part of the brim which is directly above the foramen thyroideum, is three inches and a half. The line, if drawn to the acetabulum, in place of the foramen, is a quarter of an inch shorter; a line drawn across the fore part of the brim, from one acetabulum to another, is nearly four inches and a quarter.

The outlet of the pelvis is not so regular as the brim, in its shape, even when the soft parts remain; but it is somewhat oval. The long diameter extends from the symphysis pubis to the coccyx, and measures, when that bone is pushed back, as in labour, five inches, but an inch less when it is not. The transverse diameter, from the one tuberosity of the ischium to the other, measures four inches. The outlet of the pelvis differs materially from the brim, in this respect, that its margins are not all on the same level; an oval wire will represent the brim, but, if applied to the outlet, it must be curved. The outlet, from the symphysis pubis to the tuberosity of the ischium, is semioval; but behind, it becomes more irregular, and bends upwards and backwards. The arch of the pubis, or the fore part of the outlet, is four inches broad at its base; and a perpendicular line, dropped from its centre to the bone, is fully two inches long. The top of the arch will permit a circular body to come in contact with it, whose diameter is an inch and a quarter. The length of each limb of the arch is three inches and a quarter.

SECTION SECOND.

The cavity of the pelvis is the next part to be attended to; and the most important observation to be made, is, that it is of unequal depth. At the back part, it measures from five to six inches, according as the coccyx is more or less extended; at the side, a line drawn from the brim to the tuberosity of the ischium, measures three inches and three fourths. At the fore part, the depth of the symphysis pubis

is an inch and a half. When the surface of the child's head, then, is parallel to the lower edge of the symphysis, the head is still far from having entered fully into the cavity of the pelvis; it cannot be considered in the cavity, until it be lodged fairly in the hollow of the sacrum.

It may be proper to notice the dimensions of different parts of the cavity itself. An oblique line, drawn from the sacro-iliac junction, on one side, down to the opposite tuberosity, measures six inches; and the long axis of the child's head, before it takes the turn forwards, corresponds to this line. From the ramus of the ischium to the opposite sacro-iliac junction, is five inches. From the top of the arch of the pubis, or orifice of the urethra, to the second bone of the sacrum, is four inches and five eighths to five inches. A line drawn from the top of the arch to the top of the sacrum, is about a quarter of an inch more than the antero-posterior diameter of the brim. From the top of the arch to the spine of the ischium, is three inches and a half. From the tuberosity of the ischium to the centre of the sacrum, is four inches. From the back part of the tuberosity to the sacro-iliac junction on the same side, is three inches and a half. From the extremity of the tuberosity to the spine of the ischium, is two inches. From the spine to the sacrum, is two inches; and from the top of the arch of the pubis to the plane of the ischium, is two inches. The breadth of the plane itself is two inches; so that a line traversing these different parts, from the symphysis to the sacrum, would measure, including its slight irregularities six inches. From the tuberosity to the inferior part of the thyroid hole, is an inch and a half. The long diameter of the sacro-sciatic notch, is two inches and three eighths; the short, one inch and three quarters.

In the living subject, we can readily recognise these different parts of the pelvis; and by the relation which one bears to the rest, we can ascertain, by careful examination with the finger, not only the relative position of the head with regard to any one spot, and consequently, its precise situation and progress in the pelvis, but also the shape and dimensions of the pelvis itself.

SECTION THIRD.

The shape, extent, and dimensions of the great pelvis, or that part which is above the brim, must be mentioned likewise, especially as these are of importance in estimating the deformity of a pelvis. From the symphysis pubis to the commencement of the iliac wing, at the inferior spinous process, is nearly four inches. From the inferior spinous process to the posterior ridge of the ilium, a line subtending the hollow of the costa, measures five inches. The distance from the superior spine is the same. From the top of the crest of the ilium to the brim of the pelvis, a direct line measures three inches and a half. The distance betwixt the two superior anterior spinous processes of the ilium, is fully ten inches. A line drawn from the top of the crest of the ilium to the opposite side, measures rather more than eleven inches, and touches, in its course, the intervertebral substance betwixt the fourth and fifth lumbar vertebræ. A line drawn from the centre of the third lumbar vertebra, counting from the sacrum, to the upper spine of the ilium, measures six inches and three quarters. A line drawn from the same vertebra to the top of the symphysis, measures seven inches and three quarters, and, when the subject is erect, this line is exactly perpendicular.

To conclude my observations on the dimensions of the pelvis, I remark, that the shape is different in the child and the adult. The dimensions of the brim are reversed in these two states; the long diameter of the fœtal pelvis, extending from the pubis to the sacrum. By slow degrees, the shape changes; and nearly about the time of puberty, the conjugate, and lateral diameters, are equal. When the female is fully perfected, the brim becomes more oval, the long diameter extending from one side to the other. If a girl should, very early, become a mother, the shape of the pelvis may occasion a painful and tedious labour.

SECTION FOURTH.

Finally, we are to remember that the brim, and the outlet of the pelvis, are not parallel to each other, but placed at a considerable angle. The axis of the brim will be represented by a line drawn from near the umbilicus, downwards and backwards, to the coccyx; that of the outlet, by a line drawn from the orifice of the vagina to the first bone of the sacrum. The precise points, however, which these lines will touch, must vary a little, according to the conformation and obliquity of the pelvis, and the prominence of the abdomen. Each different part of the cavity of the pelvis has its own proper axis, and the line of motion of the child's head must always correspond to the axis of that part of the pelvis in which it is placed. A pretty good idea of this subject, with regard to labour, may be obtained, by placing a small catheter of the usual curvature, in the axis of the brim, and making its extremity pass out at the axis of the outlet.

 CHAPTER V.

Of the Head of the Child, and its progress through the Pelvis in Labour.

SECTION FIRST.

THE head of the child is made up of many different bones, and those of the cranium are very loosely connected together with membrane. The os frontis, temporal, parietal, and occipital bones, compose the bulging part of the cranium, and their particular shape, regulate the direction of the sutures. The occipital bone is connected to the parietal bones, by the lambdoidal suture, which is readily discovered through the integuments, by its angular direction. The parietal bones are joined to the frontal bone, by the coronal suture, which is distinguished by its running directly across the head; and they are connected to each other by the sagittal

suture, which runs in a direct line from the occipital, to the frontal bone; as the os frontis, in the fœtus, consists of two pieces, it can sometimes, be easily traced with the finger, even to the nose. The upper and anterior angles of the parietal bones, and the corresponding corners of the two pieces of the frontal bone, are rounded off, so as to leave a quadrangular vacancy, which is filled up with tough membrane. This is called the great, or anterior fontanell, to distinguish it from another smaller vacancy at the posterior extremity of the sagital suture, which is called the small fontanell. The first is known by its four corners, and by its extending forward a little betwixt the frontal bones, and whenever it is felt, on an examination, we may expect a tedious labour; for the head does not lie in the most favourable position. The little fontanell cannot, during labour, be perfectly traced, as it is lost in the angular lines of the lambdoidal suture, which, however, ought to be readily discovered. The head is of an oblong shape, and its anterior extremity at the temples is narrower than the posterior, which bulges out at the sides by a rising of the parietal bones, called the parietal protuberances: from these the bones slope backwards, like an obtuse angle, to the upper part of the occiput, which is a little flattened, and is called the vertex. From these protuberances, the head also slopes downwards and forwards to the zygomatic process of the temporal bone, becoming, at the same time, gradually narrower.

SECTION SECOND.

The longest diameter of the head is from the vertex to the chin, and this is about five inches. From the root of the nose to the vertex, it measures four inches. From the one parietal protuberance to the other, a transverse line measures from three inches and a quarter to three inches and a half. From the nape of the neck to the crown of the head, is three inches and a half. From the one temple to the other, is two inches and a half. From the occiput to the chin, along the base of the cranium, is four inches and a half. From one mastoid process to the other, along the base, is about two inches; from

cheek to cheek is three inches. Although these may be the average dimensions of the head, yet, owing to the nature of the sutures, they may be diminished, and the shape of the head altered. The one bone may be pushed a little way under the other, and, by pressure, the length of the head may be considerably increased, whilst its breadth is diminished; but these two alterations by no means correspond, in a regular degree, to each other.

The size of the male head is generally greater than that of the female. Dr. Joseph Clarke,* an excellent practitioner, upon whose accuracy I am disposed fully to rely, says, that it is a twenty-eighth or thirtieth part larger. It is a well established fact, that owing to the greater size of male children, women who have the pelvis in any measure contracted, have often a more tedious labour, when they bear sons than daughters; and many who have the pelvis well formed, suffer from the effects on the soft parts. Dr. Clarke supposes, that one half more males than females are born dead, owing to tedious labour, or increased pressure on the brain; and owing to these causes, a greater number of males than females die, soon after birth. In twin cases, again, as the children are smaller, he calculates, that only one fifth more males than females are still-born. Dr. Bland† says, that of eighty-four still-born children, forty-nine were males, and thirty-five, females.

SECTION THIRD.

By comparing the size of the head with the capacity of the pelvis, it is evident that the one can easily pass through the other. But I apprehend that the comparison is not always correctly made, for the child does not pass with the long diameter of its cranium, parallel to a line drawn in the direction of the long diameter of the brim of the pelvis; but it descends obliquely, so that less room is required. The vertex naturally passes first, the chin being placed on the breast of the child. Now, the length of a line drawn from the nape of

* Phil. Trans. Vol. LXXVI.

† Phil. Trans. Vol. LXXI.

the neck, to the crown of the head, is three inches and a half; a line intersecting this, drawn from the one parietal protuberance to the other, measures no more. We have, therefore, when the head passes in natural labour, a circular body going through the brim, whose diameter is not above three inches and a half; and therefore, no obstacle, or difficulty can arise from the size of the pelvis. There is so much space superabounding, betwixt the pubis and sacrum, as to prevent all risk of injury from pressure on the bladder, urethra, or rectum; and as the long diameter of the head is descending obliquely, the sides of the brim of the pelvis are not pressed on. This is so certainly the case, that the head may, and actually often does pass, without any great additional pain or difficulty, although the capacity of the pelvis be a little contracted. But when the shoulders, which measure five inches across, come to pass, then the brim is completely occupied. If, however, any contraction should take place in the lateral diameter, the child would still pass, the one shoulder descending obliquely before the other.

It is of great consequence to understand the passage of the child's head in natural labour; for upon this depends our knowledge of the treatment of difficult labour. The head naturally is placed with the vertex directed to one side, or a little towards the acetabulum; and the forehead is turned in the same degree, towards the opposite sacro-iliac junction. When labour begins, and the head comes to descend, the chin is laid on the sternum, and the vertex is directed downwards, nearly in the axis of the brim of the pelvis. When, by the contraction of the uterus, the head is forced a little lower, its apex comes to touch the plane of the ischium. Upon this the side of the vertex slides downwards and forwards, as on an inclined plane, the head being turned gradually, so that, in a little time, the face is thrown into the hollow of the sacrum, and the vertex presents at the orifice of the vagina. The whole of the cavity of the pelvis is so constructed, as to contribute to this turn, which is further assisted by the curve of the vagina, and the action of the lower part of the uterus, on the head of the child. The

head, whilst its long diameter lies transversely, continues to descend in the axis of the brim of the pelvis; but when it is turned, it passes in the axis of the outlet. When the turn is making, the direction of the motion is in some intermediate point; and this fact should, in operating with instruments, be studied and remembered. When the pelvis is narrow above, and the sacrum projects forward, the vertex is long of reaching the inclined plane of the ischium; and when the head is lengthened out, so as to come in contact with it, we find, that although the projection of the sacrum directs the vertex sometimes prematurely a little forward, yet, the tendency to turn fully is resisted by the situation of the bones above; a great part of the cranium, and all the face, being above the brim, and perhaps in part locked in the pelvis. By a continuation of the force, the shape of the head may be altered; even the vertex may be turned a little to one side, its apex not corresponding exactly to the extremity of the long diameter of the head; the integuments may be tumefied, and a bloody serum be effused beneath them, so as greatly to disfigure the presentation. As, therefore, in tedious labour, occasioned by a deformed pelvis, the skull may be much lengthened and misshapen, we are not to judge of the situation of the head, by the position of the apex of the tumour which it forms; but we must feel for the ear, which bears a steady relation to that part of the head which presents the obstacle. The back and upper part of the head are compressible, but the base of the skull and the face are firm. A line drawn from the neck to the forehead, passing over the ear, is to be considered as the boundary betwixt these parts of opposite character; and therefore we attend to the relative situation of the ear, as it ascertains both the position of the head, and its advancement through the brim.

CHAPTER VI.

Of Diminished Capacity, and Deformity of the Pelvis.

SECTION FIRST.

THE pelvis may have its capacity reduced below the natural standard, in different ways. It may be altogether upon a small scale, owing to the expansion stopping prematurely. The different bones, however, being well formed, and correct in their relative proportions and distances, this may occasion painful labour, but rarely causes such difficulty as to require the use of instruments. Sometimes the bones are all of their proper size, but the sacrum is perfectly straight, by which, although both the brim and outlet are sufficiently large, yet the cavity of the pelvis is lessened; or when all the other parts are natural, the spines of the ischium may be exuberant, encroaching on the lower part of the pelvis.

Another cause of diminished capacity, is the disease called rickets, in which the bones in infancy are defective in their strength, the proportion of earthy matter entering into their composition being too small. In this disease, the long bones bend, and their extremities swell out; the pelvis becomes deformed, the back part approaching nearer to the front, and the relative distance of the parts being lost. The distortion may exist in various degrees. Sometimes the promontory of the sacrum only projects forward a very little more than usual, or is directed more to one side than the other; (1) and

(1) It is not necessary to give examples of every degree of deformity, but it will be useful to select some specimens of the different kinds. The slighter degrees do not require to be particularized. I shall first of all give the dimensions of a dried pelvis, so contracted, as to prevent a child at the full time from passing without assistance. From the pubis to the sacrum, it measures three inches; from the acetabulum to the sacrum on the right side, two and an half inches; on the left, two inches and seven eighths, from the brim above the foramen thyroideum, to the opposite sacro-iliac junction, five inches; from the same part of the brim on one side, to the same on the opposite, three inches and an half; transverse diameter, four inches and seven eighths; from the arch of the pubis to

the curvature of the bone may be either increased or diminished. If the sacrum project only a little, without any other change, the capacity of the brim alone is diminished; but if the curvature be at the same time smaller than usual, the cavity of the pelvis is lessened: but unless the ischia approach nearer together, or the lower part of the sacrum be bent forward, the outlet is unaffected; and in most cases of moderate deformity, the outlet is not materially changed. In greater degrees of the disease, the anterior part of the brim becomes more flattened, the linea ilio-pectinea forming a small segment of a pretty large circle. The sacrum forms part of a concentric circle behind; and thus the brim of the pelvis, instead of being somewhat oval, is rendered semicircular or crescentic, and its short diameter is sometimes reduced under two inches. The promontory of the sacrum may either correspond to the symphysis pubis, or may be directed to (2) one side, rendering the shape of the brim more

the hollow of the sacrum, five inches; from one tuberosity of the ischium to the other, four inches and an half; from one spine to another, four inches and an half; the arch of the pubis is natural. The distance from the face of the third lumbar vertebra, to the spine of the ilium on both sides, is six inches. These dimensions may be compared with those of the well formed pelvis. The symphysis pubis has the cartilage in the inside, projecting like a spine, which added to the smallness of the pelvis when recent. The linea ilio-pectinea also, on the left side, is for the length of two inches as sharp as a knife; and from these two causes, the cervix uteri and bladder, were torn in labour.

(2) In a pelvis of this kind, which I shall describe, the vertebræ and sacrum lean much to the left side. The line from the promontory of the sacrum to the part of the pubis opposite it, is barely an inch and an half; but an oblique line drawn to the symphysis, which is to the right of the promontory, is near two inches. From the promontory to the side of the brim at the ilium on the left side, is two inches and three tenths; on the right side, three inches and four tenths. On the left side, from the lateral part of the sacrum to the acetabulum, is nine tenths of an inch; on the right side, fully two inches. Now in this pelvis, when the soft parts are added, we shall find that an oval body may pass on the right side, whose long diameter is three inches and an half, and whose short diameter is barely two inches.

In a pelvis with a semicircular brim, whose short diameter, at the middle and each side, is one inch and an half, an oval could pass when the

irregular, and the dimensions smaller on one side than the other. In some instances, the shape of the brim is like an equilateral triangle; and although the diameter from the pubis to the sacrum be not diminished, yet the acetabula being nearer the sacrum, the passage of the head is obstructed.

SECTION SECOND.

The pelvis is likewise, especially in manufacturing towns, sometimes distorted by malacosteon, or softening of the bones of the adult. This is a disease which sometimes begins soon after delivery, and very frequently during pregnancy. It is, indeed, comparatively rare, in those who do not bear children, and it is always increased in its progress by gestation. It must be carefully attended to, for, to a negligent practitioner, it has at first very much the appearance of chronic rheumatism. It very generally begins with pains about the back, and region of the pelvis. These pains are almost constant, or have little remission. They are attended with increasing lameness, loss of flesh, weakness, and fever; but the distinguishing mark is diminution of stature, the person gradually becoming decrepid. In malacosteon, the pelvis suffers, but the distortion is generally different from that produced by rickets; for whilst the top of the sacrum sometimes sinks lower in the pelvis, and always is pressed forward, (3) the acetabula are pushed backwards and inwards, towards the sacrum and towards each other; (4) so

soft parts are added, whose long diameter is about two inches and a quarter; and the short one about one inch and a quarter.

(3) In a well formed pelvis, a line drawn transversely along the brim, and in contact with the sacrum, either touches at its two extremities, the sacro-iliac junctions or the linea ilio-pectinea, about half an inch before them; but in a very deformed pelvis, such a line will touch the brim, at or even before the acetabula. In a well formed pelvis, a line drawn from the middle of the linea ilio-pectinea on one side, to the same spot on the opposite side, is about an inch or an inch and an half distant from the sacrum. But in a deformed pelvis, this line would either pass through the sacrum, or altogether behind it.

(4) The following are the dimensions of a pelvis of this kind, which I select as a specimen. From the spinous process of the ilium on one side

that, were it compatible with life, for the disease to last so long, these parts would meet in a common point, and close up the pelvis, or at least convert its cavity to three slits. The ossa pubis form a very acute angle; so that the brim of the pelvis, instead of being a little irregular as in slight cases of rickets, or semicircular as in the greatest degree of that disease, consists, when malacosteon has continued long, of two oblong spaces on each side of the sacrum, terminating before, in a narrow slit, formed betwixt the ossa pubis. (5) In

to the other, is eight inches and three fourths. From the lumbar vertebræ to the spinous process of the ilium on the right side, six inches; on the left side, one inch and seven eighths. From the spinous process of the ilium back to its ridge, two inches and an half. From the symphysis pubis to the sacrum, one inch and three fourths. From the right acetabulum to the sacrum, six tenths of an inch; from the left, seven eighths of an inch. From the brim above the foramen thyroideum to the same point on the opposite side, seven eighths of an inch. From the same part of the brim to the opposite sacro-iliac junction, three inches and an half on both sides. From the tuberosity of one ischium to that of the other, two inches and an half. From the tuberosity to the coccyx, three inches. From the spine of one ischium to that of the other, three inches and an half. From the lower part of the symphysis pubis to the hollow of the sacrum, four inches; distance of the rami of the pubis, five eighths of an inch.

This pelvis has a triangular brim; for it will be observed that the brim above the foramen thyroideum measures nearly an inch across, and therefore there is a considerable space betwixt the two ossa pubis, gradually, however, becoming narrower toward the junction of the bones, but little advantage in delivery can be gained from this. When we examine it with a view to determine what bulk may be brought through the brim, we find that it is by its shape virtually divided into two cavities, one on the right and the other on the left side, and the short diameter of the one is six tenths of an inch, and that of the other seven eighths of an inch; therefore no art can bring a child at the full time through it.

In this pelvis, the sacrum has fallen so forward at the top, that in a standing posture the face of that bone is almost horizontal, and its under part with the coccyx is bent forward like a hook. The vertebræ are much distorted.

(5) This is the case in a pelvis where the distance from the part of the brim above the foramen thyroideum on one side, across to the same part on the opposite side, is only five eighths of an inch. From the right acetabulum to the sacrum is an inch and three eighths. From the left is one inch. This pelvis at the brim is externally triangular, but it is, from the near approximation of the bones, virtually semicircular, the space betwixt the two ossa pubis being so trifling as not to merit consideration; and the

this narrow space, when the woman is advanced in her pregnancy, the urethra lies, and the bladder rests upon the pendulous belly; so that, if it be necessary to pass the catheter, we must sometimes use one made of elastic materials, or a male catheter, directing the concavity of the instrument towards the pubis. If the instrument be large, and the ossa pubis very near each other, it may be jammed betwixt them, if it be incautiously introduced. In this disease, as well as in rickets, it is to be remembered, that the promontory of the sacrum may overhang the contracted brim, so as more effectually to prevent the head from entering it.

Rickets being a disease, which is at its greatest height in infancy, we have not at present to consider the treatment. Malacosteon is, on the contrary, a disease of the adult; and it would be of great importance to child-bearing women, to know how to check its progress. But the means capable of doing this with any tolerable degree of certainty, have not yet been discovered. As gestation uniformly increases the disease, it is proper that the woman should live *absque marito*. As there is evidently a deficiency of earth in the bones, it has been proposed to give the patient phosphate of lime, but little advantage has been derived from it; and indeed, unless we can change the action of the vessels, it can do no good to prescribe any of the component parts of bone. We have, in the present state of our knowledge, no means of rendering the action more perfect, otherwise than by endeavouring to improve the general health and vigour of the system, by the use of tonics, the cold bath, and attending to the state of the bowels. Anodyne frictions, and small blisters, sometimes relieve the pain. *

diameter of the brim here is one inch, exclusive of the small slit betwixt the bones. The sacrum in this pelvis is very much curved, and the outlet is small.

* Upon the subject of deformity of the pelvis, and for tables of many particular instances of distortion, I have great pleasure in referring the reader to the works of Dr. Hull, a practitioner of sound judgment, and extensive knowledge

SECTION THIRD.

The pelvis may be well formed externally, and yet its capacity may be diminished within, by exostosis from some of the bones; or it may be affected in consequence of the fracture of the acetabulum, from which I have seen extensive and pointed ossification stretch for nearly two inches into the pelvis; or steatomatous or scirrhus tumours may form in the pelvis, being attached to the bones or ligaments, of which I have known examples. (6) An enlarged ovarium, (7) or vaginal hernia, (8) may also obstruct delivery, even so much as to require the crochet; and therefore, although they be not indeed instances of deformed pelvis, yet, as they diminish the capacity of the cavity, as certainly as any of the former causes which I have mentioned, it is proper to notice them at this time. Enlarged glands in the course of the vagina, polypous excrescences about the os uteri or vagina, scirrhus of the rectum, and firm encysted tumours in the pelvis, may likewise afford an obstacle to the passage of the child. Some tumours, however, gradually yield to pressure, and disappear until the child be born; others burst, and have their contents effused in the cellular substance. A large stone in the bladder may also be so situated during labour, as to diminish very much the cavity of the pelvis; and it may be even necessary to extract the stone before the child be delivered.

(6) Dr. Denman mentions a fatal case of this kind, to which Dr. Hunter was called. The child was delivered by the crotchet, but the patient died on the fourth day. A firm fatty excrescence, springing from one side of the sacrum, was found to have occasioned the difficulty. Vide *Introd.* Vol. II. p. 72.—Baudelocque, in the 5th vol. of *Recueil Periodique*, relates a case, where, in consequence of a scirrhus tumour adhering to the pelvis, the crotchet was necessary. In a subsequent labour, the caesarean operation was performed, and proved fatal to the mother.—Dr. Drew records an instance where the tumour adhered to the sacro-sciatic ligament, and was successfully extirpated during labour. Vide *Edin. Med. Journal*, Vol. I. p. 23.

(7) A fatal case of this kind occurred to Dr. Ford, and is noticed by Dr. Denman. Vol. II. p. 75.—Another fatal instance is recorded by M. Baudelocque, *L'Art.* section 1964.

(8) Several cases of this kind have been met with, and in one related by M. Brand, and noticed by Dr. Sandifort in his *Obs. Anat. Path.* the woman died undelivered.

SECTION FOURTH.

In order to ascertain the degree of deformity, and the capacity of the pelvis, different instruments have been invented. Some of these are intended to be introduced within the pelvis, and others to be applied on the outside, deducting a certain number of inches for the thickness of the pubis, sacrum, and soft parts. But these methods are so very uncertain, that I do not know any person who makes use of them in practice. The hand is the best pelvimeter, and must in all cases, where an accurate knowledge is necessary, be introduced within the vagina. By moving it about, and observing the number of fingers which can be passed into different parts of the brim, or the distance to which two fingers require to be separated in order to touch the opposite points of the brim, or the space over which one finger must move in order to pass from one part to another, we may obtain a sufficient knowledge, not only of the shape of the brim, cavity, and outlet of the pelvis, but also of the degree to which the soft parts within are swelled, as well as of the position and extent of any tumour which may be formed in the pelvis. We may be farther assisted by observing, that in great degrees of deformity or contraction, the head does not enter the brim at all; in smaller degrees it engages slowly, and the bones of the cranium, form an angle more or less acute, according to the dimensions of the brim, into which it is squeezed.

As in many cases of deformed and contracted pelvis, it is necessary to break down the head in order to get it through the cavity, it will be proper to subjoin the dimension of the fœtal head when it is reduced to its smallest size. When the frontal, parietal, and squamous bones are removed, which is all that we can expect to be done in a case requiring the crotchet, we find that the width of the base of the cranium, over the sphenoid bone, is two inches and a half. The distance from cheek to cheek is three inches. From the chin to the root of the nose is an inch and a half; and by separating the symphysis of the jaw, the two sides of the maxilla may recede, so as to make this distance even less. From the chin to the nape of

the neck, when the chin is placed on the breast, is two inches and three quarters. When, on the contrary, the chin is raised up, and the triangular part of the occiput laid back on the neck, the distance from the throat to the occiput is two inches. The smallest part of the head, then, which can be made to present, is the face; and when this is brought through the brim, the back part of the head and neck may, although they measure two inches, be reduced by pressure so as to follow the face. The short diameter of the chest when pressed, is an inch and a half; that of the pelvis is the same. The diameter of the shoulder is one inch.

CHAPTER VII.

Of Augmented Capacity of the Pelvis.

A VERY large pelvis, (1) so far from being an advantage, is attended with many inconveniences, both during gestation and parturition. The uterus, in pregnancy, does not ascend at the usual time out of the pelvis, which produces several uneasy sensations; it is even apt, owing to its increased weight, to be prolapsed; or, if the bladder be distended, it may readily be retroverted. At the very end of gestation, the uterus may descend to the orifice of the vagina, and, during labour, forcing pains are apt to come on before the os uteri be properly dilated, by which both the child and the uterus may be propelled, even out of the vagina; and in many instances, although this should not happen, yet the pains are severe and tedious, especially if the practitioner be not aware of the nature of the case.

(1) The following are the dimensions of a very large pelvis which I possess. The conjugate diameter is four inches and three fourths; the lateral five inches and five eighths; the diagonal five inches and an half. From the symphysis pubis to the sacro-iliac junction, five inches. From the top of the arch of the pubis to the sacrum, is five inches and three eighths. From one tuberosity of the ischium to the other, is five inches and an half; and the arch is very wide. Depth of the pelvis at the sacrum without the coccyx, five inches. Breadth of the sacrum at the top, four inches and seven eighths. Depth of the pelvis at the sides, four inches.

CHAPTER VIII.

Of the External Organs of Generation.

SECTION FIRST.

THE symphysis of the pubis, and insertion of the recti muscles, are covered with a very considerable quantity of cellular substance, which is called the mons veneris. From this the two external labia pudendi descend, and meet together about an inch before the anus; the intervening space receiving the name of perinæum. On separating the great labia, we observe a small projecting body placed exactly on the lower part of the symphysis. This is the clitoris, and it is surrounded by a duplicature of skin called its prepuce. From this duplicature, or rather from the point of the clitoris we find arising on each side, a small flap, which is continued down on the inside of the labia, to the orifice of the vagina. These receive the name of nymphæ, or labiæ minores or interiores. On separating these, we observe about nearly an inch below the clitoris, the extremity of the urethra; and just below it the orifice of the vagina, which is partly closed up, in the infant state, by a semilunar membrane called the hymen. These parts are all comprehended under the general name of vulva, or external organs of generation.

SECTION SECOND.

The labia have nothing peculiar in their structure, for they are merely duplicatures of the skin, rendered prominent by a deposition of fatty matter. Externally they have just the appearance of the common integuments; and at the age of puberty, are, together with the mons veneris generally, covered with hairs. Internally they resemble the inside of the lips or eye-lids, and are furnished with numerous sebaceous glands. They are placed closer together below than above; and at their junction behind, a small bridle called the fourchette, extends across, which is generally torn whenever a child is born.

The nymphæ at first appear to be merely duplicatures of the inner surface of the labia, but they are, in fact, very different in their structure. They are distinct vascular substances, inclosed in a duplicature of the skin. When injected by filling the pudic artery, each nymphæ is found to be made up of innumerable serpentine vessels, forming an oblong mass. This at the upper part joins the clitoris, to which, perhaps, it serves as an appendage; whilst the loose duplicature of skin in which it is lodged, by being unfolded, permits the labia to be more safely and easily distended, during the passage of the child.

SECTION THIRD.

The clitoris is a small body resembling the male penis, but has no urethra. It consists of two corpora cavernosa, which arise from the rami of the ischia and pubis, and unite at the symphysis of the pubis. When these crura and the nymphæ are filled with wax, we find on each side, two vascular injected bodies, one of them in close contact with the bones, the other more internal with regard to the symphysis of the pubis. When the one is injected, the other is injected also, and both are connected together at the upper part. The clitoris, formed by the junction of its crura, is apparently about the eighth part of an inch long, a part of it not being seen, and it is supported by a pretty strong suspensory ligament which descends from the symphysis. When distended with blood, it becomes erected and considerably longer, and is endowed with great sensibility. This erection and vascular turgescence is in a great measure produced by two muscles, analogous to those called *erectores penis* in the male.

SECTION FOURTH.

On separating the nymphæ, we find a smooth hollow or channel, extending down from the clitoris for nearly an inch; and at the termination of this, and just above the vagina, is the orifice of the urethra which, although not one of the organs of generation, deserves particular attention. The bladder is lodged in the fore part of the pelvis,

immediately behind the symphysis pubis; but when distended, it rises up, and its fundus has been known to extend even to the umbilicus. The urethra is the excretory duct of the bladder; it is about an inch and a half long, and passes along the upper part of the vagina, through which it may be felt like a thick fleshy cord. The structure of the urethra is extremely simple, for little can be discovered except the continuation of the internal coat of the bladder, covered with condensed cellular substance. On slitting up the canal, numerous mucous lacunæ may be discovered in its course, and two of these at the orifice are peculiarly large. The urethra is very vascular, and, when injected and dried, its orifice is perfectly red. In the unimpregnated state, it runs very much in the direction of the outlet of the pelvis; so that a probe, introduced into the bladder, and pushed on in the course of the urethra, would, after passing for about three inches and a half, strike upon the fundus uteri, and, if carried on for an inch and a half farther, would touch the second bone of the sacrum. The uterus being much connected with the bladder at its lower part, it follows, that when it rises up in pregnancy, the bladder will also be somewhat raised, and pressed rather more forwards; and the vagina being elongated, the urethra, which is attached to it, is also carried a little higher, and, in its course, is brought nearer the inside of the symphysis pubis. In those women who, from deformity of the pelvis or other causes, have a very pendulous belly, the bladder, during pregnancy, is sometimes turned over the pubis, the urethra curved a little, and its opening somewhat retracted within the orifice of the vagina. When it is necessary to pass the catheter, it is of great consequence to be able to do it readily, and this is by no means difficult to do. The woman ought to be placed on her back, with her thighs separated, and the knees drawn a little up: a bason is then to be placed betwixt the thighs, or a bladder may be tied firmly to the extremity of the catheter, to receive the urine. The instrument is then to be conveyed under the thigh, and the labia separated with the finger. The clitoris is next to be touched, and the finger run gently down the fossa that leads

to the orifice of the urethra, which is easily distinguished, by its resemblance to an irregular dimple, situated just above the entrance to the vagina. The point of the instrument is to be moved lightly down the fossa after the finger, and it will readily slip into the urethra. It is then to be carried on in the direction of the axis of the outlet of the pelvis, and the urine drawn off. This operation ought always to be performed in bed, and the patient is never to be exposed. In cases of fractures, bruises, &c. where the woman cannot turn from her side to her back, the catheter may be introduced from behind, without moving her. When the bladder is turned over the pubis, as happens in cases of great deformity of the pelvis, it is sometimes requisite to use either a flexible catheter, or a male catheter, with its concavity directed forward. When the uterus is retroverted, if we do not use a flexible catheter, we must employ a male catheter, directing the concavity backwards. When the head of the child in labour has entered the pelvis, the urethra is pushed close to the symphysis of the pubis; then the flexible or flat catheter must be introduced parallel to the symphysis, and the head of the child may be raised up a little with the finger. This, indeed, of itself, is sufficient to allow the urine to flow; and when the urine is retained after delivery, it is often sufficient to raise up the uterus a little with the finger.

SECTION FIFTH.

The orifice of the vagina is situated nearly opposite to the anterior part of the tuberosity of the ischium, about an inch and a half below the symphysis of the pubis, and in the direction of the axis of the outlet of the pelvis. It is in all ages, but more especially in infancy, considerably narrower than the canal itself, and is surrounded by a sphincter muscle, which arises from the sphincter ani, and is accompanied with a vascular plexus, called plexus retiformis. In children, it is always shut up by a membrane called the hymen, which consists of four angular duplicatures of the membrane of the vagina; the union of which may be discovered by corresponding lines on the hymen. At the upper part there is a

semilunar vacancy, intended for the transmission of the menses. Sometimes it is imperforated, or partially or totally absorbed. When the hymen is ruptured, it is supposed to shrivel into three or four small excrescences at the orifice of the urethra, called the *carunculæ myrtiformes*.

Immediately below the orifice of the vagina, there is a short sinus within the labia, which extends farther back than the vagina. This has been called the *fossa navicularis*, and reaches to the fourchette.

CHAPTER IX.

Of the Internal Organs of Generation.

SECTION FIRST.

THE internal organs of generation consist of the vagina, with the uterus and its appendages.

The vagina is a canal, which extends from the vulva to the womb. It consists principally of a spongy cellular substance, endowed with some elasticity, and having an admixture of indistinct muscular fibres. It is lined by a continuation of the cutis from the inner surface of the labia; and this lining, or internal coat, forms numerous wrinkles, or transverse rugæ, on the anterior and posterior sides of the vagina. They are peculiar to the human female, and are most distinctly seen in the virgin state; but after the vagina has been distended, they are more unfolded, and sometimes the surface is almost smooth. In the whole course of this coat, may be observed the openings of numerous glandular follicles, which secrete a mucous fluid. In the fœtus this is white and milky; in the adult it is nearly colourless. The vagina is very vascular; and when the parts are well injected, dried, and put in oil of turpentine, the vessels are seen to be both large and numerous. Just below the symphysis pubis, we observe a great congeries of vessels surrounding the urethra and upper part of the vagina.

The vagina forms a curved canal, which runs very much in the course of the axis of the outlet and cavity of the pelvis. It is not round, but considerably flattened; it is wider above than below, being in young subjects much contracted about the orifice. At its upper part, it does not join the lips of the os uteri directly, but is attached a little above them, higher up behind than before, so that the posterior lip of the uterus is better felt than the anterior. In the infant, the vagina is attached still higher up, so that the lips of the uterus project in it something like a penis.

The inner coat of the vagina is reflected over the lips of the uterus, and passes into its cavity, forming the lining of the uterus. The junction of the uterus and vagina is so intimate, that we cannot make an accurate distinction betwixt them; but may say, that the one is a continuation of the other. The vagina adheres before very intimately to the urethra, behind it comes gradually to approach to the rectum, and at its upper part it is pretty firmly connected to it. This union forms the recto-vaginal septum. These connexions of the vagina are formed by cellular substance, there being only a very small part of its upper extremity covered with peritoneum.

When the finger is introduced into the vagina in situ, the urethra is felt on its fore part, resembling a firm fleshy cylinder. Behind, the rectum can be traced down to the point of the coccyx. At the side, the ramus of the ischium and of the pubis, together with the obturator internus muscle, are to be distinguished. In a well formed pelvis, the finger cannot easily reach beyond the lower part of the sacrum; during labour, however, the parts being more relaxed, the bone may be felt more easily, but its promontory cannot be touched with the finger.

SECTION SECOND.

The uterus is a flat body, somewhat triangular in its shape, being considerably broader at its upper than at its under part. It is scarcely three inches in length, about two inches broad above, and one below. It is divided by anatomists into the fundus or upper part, which is slightly convex, and lies above the insertion of the fallopian tubes; the cervix or nar-

row part below; the body, which comprehends all the space betwixt the fundus and cervix; and last of all, the os uteri, which is the termination of the cervix, and consists of a small transverse chink, the two sides of which have been called the lips of the uterus. The uterus contains a small cavity of a triangular shape, which opens into a narrow channel formed in the cervix, and is continued down to the os uteri. At the upper angles may be perceived the openings of the fallopian tubes. Both the cavity and the channel are lined with a continuation of the inner coat of the vagina, but it has a very different appearance from that which it exhibits in the vagina. The surface of the triangular cavity is smooth, and the skin which covers it is very soft and vascular. The surface of the cervical channel again is rugous, and the rugæ are disposed in a beautiful foliated manner, so as to have some resemblance to a palm tree. This part is by no means so vascular as the cavity above; but it contains betwixt the rugæ several lacunæ, which secrete a mucous fluid. Where the cavity of the uterus terminates in the channel of the cervix, there is sometimes a slight contraction of the passage.

The substance of the uterus is made up of numerous fibres, disposed very irregularly, and having a considerable quantity of interstitial fluid interposed, with many vessels ramifying amongst them. A dense succulent texture is thus formed, which constitutes the substance of the uterus. On cutting open the womb, we observe that its sides are about a quarter of an inch thick, but are rather thinner at the fundus, than elsewhere; though the difference is very trifling. Several irregular apertures may be perceived on the cut surface; these are the venous sinuses. The fibres which we discover are muscular; but we cannot in the unimpregnated state, observe them to follow any regular course.

The arteries of the uterus are four in number, with corresponding veins. The two uppermost arteries arise either high up from the aorta, or from the emulgent arteries. They descend, one on each side, in a serpentine direction behind the peritoneum, and are distributed on the ovaria tubes and upper part of the uterus. These are called spermatic arteries.

The two lowermost, which are called uterine, arise from the hypogastric arteries. They run, one on each side, toward the cervix uteri, and supply it and the upper part of the vagina. Thus the fundus uteri is supplied by the spermatic arteries, and the cervix, by the uterine arteries; and these, from opposite sides, send across branches which communicate one with the other. But besides this distribution, the uterine artery is continued up the side of the uterus, and meets with the spermatic; so that, at the two sides, we have arterial trunks, from which the body of the uterus is liberally supplied with blood. The veins correspond to the arteries. The nerves of the uterus, like the blood vessels, have also a double origin, and follow nearly the same course. Those which come from below are derived from the sacral nerves, especially from the fourth pair. Those from above come chiefly from the mesocolic plexus, and trunk of the intercostal. The renal plexus furnishes nerves to the ovarium.

The lymphatics, in the unimpregnated state of the uterus, are small, and not easily discovered. Those from the upper part of the womb, and from the ovaria, run along with the spermatic vessels, terminating in glands placed by the side of the lumbar vertebræ. Hence, in diseases of the ovaria, there may be both pain and swelling of the glands. But the greatest number of lymphatics run along with the uterine artery, several of them passing to the iliac and sacral glands, and some accompanying the round ligament. This may explain why, in certain conditions of the uterus, the inguinal glands swell. Others run down through the glands of the vagina; and hence, in cancer of the womb, we often feel those glands hard and swelled, sometimes to such a degree, as almost to close up the vagina.

The uterus is covered with the peritoneum, which passes off from its sides, to reach the lateral part of the pelvis, a little before the sacro-iliac symphysis; and these duplicatures, which, when the uterus is pulled up, seem to divide the cavity of the pelvis into two chambers, are called very improperly the broad ligaments of the uterus.

When the uterus is raised, and those lateral duplicatures

of the peritoneum are stretched out, we observe, that at the upper part they form two transverse folds or pinions, one before, and the other behind. In the first of these, the fallopian tubes are placed; in the second, the ovaria.

Besides these duplicatures, we likewise remark other two, which extend from the sides of the fundus uteri to the linea ilio-pectinea at the side of the pelvis, and then run on to the groin. These contain, on each side, a pretty thick cord, which arises from the fundus uteri, and passes out at the inguinal canal, being then lost in the labia pudendi. These cords, which are called the round ligaments of the uterus, consist of numerous blood vessels, some lymphatics, small nerves, and fibrous matter.

The fallopian tubes, in quadrupeds, are merely continuations of the horns of the uterus; but in the human female, they are very different in their structure from the womb. They appear to consist in a great measure of spongy fibrous substance, which, as Haller observes, may be inflated like the clitoris. They are hollow, forming a canal of about three inches long, lined with a continuation of the internal coat of the uterus; and as they lie in the anterior pinion of the broad ligaments of the uterus, they are covered of necessity with a peritoneal coat. They originate from the upper corners of the uterine cavity by very small orifices, but terminate at the other extremity in an expanded opening with ragged margins, which are called the fimbriæ of the tube. The internal surface of the canal is plaited, the plicæ running longitudinally.

The ovaria (1) lie in the posterior pinion of the broad liga-

(1) In birds, we find that the ovaria contain a great number of yolks of different sizes. Those which are nearest the wide canal called the oviduct, which leads to the cloaca, are largest, whilst those remote from it are very minute. The full grown yolk is detached from the ovarium, and in its passage down is furnished both with the albumen and the necessary membranes and shell. In viviparous fishes, as the skate, ray, &c. the same structure obtains. These animals have two ovaria, containing eggs of different sizes; the smaller are white, the larger, yellowish, and they pass down to an oviduct, which contains a glandular body that furnishes the covering of the egg. Each ovary has a separate oviduct, which forms a

ment. They are two oval flattened bodies, of a whitish colour, and glandular consistence. They are cellular, but not very vascular, although vessels run to their coat. After puberty, they contain numerous minute vesicles, the largest of which are near the surface, and even form slight projections from it. These are the ova of the female, and are filled with a coagulable lymphatic matter. Their number is uncertain, but Haller says he never saw above fifteen in one woman. In old women they disappear, or shrivel.

The ovary is covered with the peritoneum; but when the ovum is impregnated and becomes prominent, the peritoneum which covers it is absorbed, the ovum passes into the fallopian tube, and the little scar which remains on the surface of the ovary is called corpus luteum.

vast sac, that terminates in the sides of the cloaca, by orifices that have a duplicature like a valve. The cloaca itself forms an ample reservoir, that seems more like a continuation of the oviduct than the termination of the rectum. In oviparous fishes, the ovaria are known under the name of roes, and all the visible eggs are of the same size, and so numerous, that some contain above 200,000. They are enveloped in a fine transparent membrane; and septa from this envelope divide the internal parts, and furnish points of attachment to the ova, which are expelled previous to fecundation. These are called oviparous fishes, and have properly speaking no oviduct. The ovaria of frogs resemble those of fishes, and the ova are, previous to expulsion, enveloped in a glary fluid. In the slug we find both testicles and ovaria. The ovary is a grape-like tissue, containing numerous small grains or ova, attached by pedicles, which are canals that lead into the oviduct. This is a serpentine canal, that after having adhered to the testicle, opens in the common cavity of generation, in which also the penis or duct from the testicle opens, and during copulation, the two individuals mutually impregnate each other. The ovaria of the adder are like strings of beads.

In many quadrupeds, the ovaria contain ova almost as distinct as some of those animals I have just noticed. The hedgehog has an ovary like a bunch of grapes; and the ovary of the civet has a knotted surface, and resembles a packet of little spheres: the ovary of the didelphis is also vesicular. The common sow has also an ovary somewhat resembling externally that of oviparous animals. Most other quadrupeds have an ovary more smooth and somewhat oblong in shape, and in general the tube and ovary are unconnected, as in the human female; but in the otter, my brother observed, that both were contained in a kind of capsule formed by the peritoneum, so that ventral extra-uterine pregnancy cannot take place in this animal.

In the fœtus, the ovaria and tubes are placed on the psoæ muscles; but in the adult, they lie loosely on the pelvis, and the uterus sinks within the cavity. The os uteri is directed forward, and the fundus backward, being in general found opposite to, or resting on the second bone of the sacrum.

CHAPTER X.

Of the Diseases of the Organs of Generation.

SECTION FIRST.

THE labia are subject to several diseases; of these, the first which I shall mention is phlegmonoid inflammation. This may occur at any period of life, and under various circumstances; but frequently it takes place in the pregnant state, especially about the sixth and seventh month of gestation, and sometimes it appears suddenly, oftener than once in the same pregnancy; occasionally it makes its attacks in child-bed, in consequence of the violence which the parts may have sustained in labour. It is marked by the usual symptoms of inflammation, namely, heat, pain, throbbing, and more or less swelling, not unfrequently attended with fever. The swelling is sometimes hard and movable, like a gland, especially when the progress is slower than usual. In general, the course of the disease is rapid, the pain and inflammation are at first very acute, and the part swells speedily. In a few hours, especially if a poultice have been applied, the abscess begins to point at the inside of the labium, and the nympha appears pushed out of its place. Sometimes it bursts within thirty six hours from its appearance. By means of cold saturnine applications, and gentle laxatives, the inflammation may sometimes be resolved, but most frequently it ends in suppuration, which is to be promoted by fomentations and warm cataplasms. If necessary an opiate may be given to abate the pain, and a pillow must be placed between the knees, to keep the part from pressure. If possible, the abscess ought not to be punctured, but, if the

pain and tension be unbearable, we must indulge the patient by making a small opening; a good deal of blood will in this case come with the matter. After the abscess bursts, the parts may be dressed with any mild ointment. Should the opening of the abscess be higher than its bottom, it will be necessary, if the discharge continue,* to lay it open, after which it will speedily heal.

SECTION SECOND.

The internal surface of the labia is often the seat of ulceration and excoriation, which may generally be avoided by the daily use of the bidet. The most general form under which excoriation appears, is that of a raw surface, as if the cuticle had been peeled from a blistered part. Most frequently these sores are the consequence of acrimony, produced by inattention to cleanliness, especially in children; and in their case the labia, if care be not taken, may cohere. The treatment consists in keeping the parts clean, bathing the sore with a weak solution of sulphate of zinc, and preventing cohesion. Should the parts not heal readily, they may be washed with a very weak solution of nitrate of silver, or touched with caustic. When adhesion takes place, it may, if slight, be destroyed, by gently pulling the one labium from the other; if firmer, the parts must be separated with the knife. In either case, reunion must be prevented, by washing the surface frequently with solution of alum, and applying a small piece of lint spread with simple ointment. Sometimes we meet with deeper ulcerations, which it is of great importance to the domestic happiness of individuals to distinguish from chancre. Nothing seems easier in a book, than to make the diagnosis, but in practice it is often very difficult. A well marked chancre begins with circumscribed inflammation of the part; then a small vesicle forms which bursts, or is removed by slough, and displays a hollow ulcer, as if the skin had been scooped away or nibbled by a small animal; its surface is not polished but rough, and covered with pus, which is generally of a buff or dusky hue; the margins are red, and the general aspect of the sore

* Vide Mr. Hey's surgical observations, p. 188.

is angry. But the most distinguishing character of the chancre, is considered to be a thickening or hardness of the base and edges of the ulcer. The progress of the sore is generally slow, either towards recovery or augmentation. When remedies are used, the first effect produced is removing the thickening by degress, and lessening the discharge, or changing its nature, so that the surface of the sore can be seen; it has then in general a dark fiery look, which continues until all the diseased substance be removed, and the action of the part be completely changed. Now, from this description, we should, it may be supposed, be at no loss in saying whether a sore were venereal; but in practice, we find many deviations from this description. The thickening may be less in one case than another, and may not be easily discovered, yet the sore may be certainly venereal. Peculiarity of constitution, or of the part affected, can modify greatly the effects of the virus. There may be extensive inflammation, or phagedænic ulceration; and yet the action may be venereal. It is however satisfactory to know, in these cases, that in a little time, unless extensive sloughing have taken place, the appearance of the sore becomes more decided, the proper character of chancre appears, and the usual remedy cures the patient.

Phagedæna is a very troublesome, and sometimes a formidable disease, especially to infants. I shall here only notice that form which appears in adults, and which, as it is infectious, is sometimes taken for syphilis. It commences with a livid redness of the part, succeeded speedily by vesication and ulceration, which extends laterally, and sometimes penetrates deep. The ulcer has an eating appearance, is painful, discharges a great quantity of matter, and very often is attended with fever. A variety of this disease is attended with superficial sloughing, which may be frequently repeated, and is generally preceded by a peculiar appearance of cleanness in the sore. This is not to be confounded with sloughing, produced by simple inflammation or irritation of the parts, which is similar in its nature and treatment to common gangrene. Phagedæna generally requires stimulating applications, such as red precipitate, caustic, camphorated spirits,

or oxymuriate of mercury, mixed with lime water; but if these increase the irritation, we must foment the sore with decoction of camomile flowers, mixed with a little tincture of opium, and then apply mild dressings. Rest is essential to the cure; and if a febrile state exist, it is to be obviated by laxatives, acids, mild diaphoretics, and decoction of bark. If there be no fever, mercury, or the nitrous acid, often effectually changes the action of the parts.

Sometimes irritable sores appear on different parts of the labia, or orifice of the vagina, in succession, healing slowly one after another. These have an inflamed appearance, the margins are sometimes tumid, and the surface is at first irregular and depressed; but afterwards it forms luxuriant granulations. There is another sore met with on the inside of the labium, and which generally spreads to the size of a sixpence. The surface is quite flat, and sunk a little below the level of the surrounding parts. The margins are thickened, and sometimes callous, the discharge thin, and the ulcer not in general painful, the surface soft and spongy without a hard base. These sores generally agree best with stimulants, especially caustic and escharotics. When they do not yield to this treatment, it will be proper to have recourse to a cautious course of mercury. Some of these, like the phagedæna, are infectious.

Some of these sores are occasionally productive of secondary symptoms, such as ulcers in the throat. When these succeed a sore, which has run its course differently from chancre, and been healed without the use of mercury, it is allowable to suppose, that they also may be cured, merely by attending to the general health, and perhaps by local applications. But if they continue without amendment, or threaten danger to any important part, we must not delay making trial of mercury.

SECTION THIRD.

It sometimes happens, that after a slight degree of inflammation, producing heat and itching of the parts, numerous excrescences appear within the labia. These are sometimes

soft and fungous, but, in other instances, hard and warty. Both of these states are sometimes induced by previous venereal inflammation; but they may occur independently of that disease. Even when there is an offensive discharge from the fungi or warts, we are not always to conclude that they are syphilitic, but must be guided in our judgment by concomitant circumstances. Warty excrescences are most readily removed, by the application of savin powder by itself, or mixed with red precipitate; and during its operation, the parts may be washed with lime water. The powder must be applied close to the roots of the warts, for their substance is almost insensible. Fungous excrescences may sometimes be removed by ligature; but when the parts are sensible, they must be destroyed, by applying a strong solution of caustic with a pencil, or sprinkling them with escharotic substances. If these cannot be borne, we must first abate the sensibility, by tepid fomentations with decoction of poppies, or water with a little tincture of opium, or decoction of cicuta, or weak infusion of belladonna. Should there be ground for suspecting a syphilitic action, mercury must be given, at the same time that we make suitable local applications; but in doubtful cases, I have seen this medicine given without any benefit. These excrescences, from their appearance, their great pain, and fetid discharge, may suggest an opinion of their being cancerous; but they begin in a different way, and generally yield, though sometimes slowly, to proper applications.

SECTION FOURTH.

Scirrhus tumours may form in the labia, and are distinguished by their hardness, and by their moving under the skin until adhesion from inflammation takes place. These tumours are sometimes scrofulous, and have little pain, even when they have gone on to suppuration. Oftener, however, they are cancerous; and these are distinguished from the former, by their greater hardness and inequality; and by their shooting pain. If they are not removed, the cancerous abscess points to the inner surface of the labium, its top becomes dark coloured, sloughs off, a red fluid is discharged,

and presently a fungus appears. Soon after this, the glands at the top of the thigh, and sometimes those in the course of the vagina, swell. If all the diseased parts can be removed, an operation must be performed. If they cannot, we must palliate symptoms by proper dressing and opiates.

SECTION FIFTH.

Soft fleshy appendiculæ, or firm polypous tumours sometimes spring from the labia. Both of these, especially the latter, may give trouble by their weight or size. They may also, by being fretted, come to ulcerate, and the ulceration is always of a disagreeable kind. They ought to be, therefore, early removed by the knife or the ligature. If the base be broad, the double ligature must be employed; but should there be any hardness about the part where the ligature would be applied, it is best to dissect the whole growth out.

Encysted tumours may form in the labia. They are elastic, and contain a glairy fluid. A seton may be passed, or the cyst may be laid open.

SECTION SIXTH.

Œdematous tumour of the labium is either a consequence of pregnancy or a symptom of general dropsy. The tumour is variable in its size. When it depends on pregnancy, it is seldom necessary to do any thing; and even in time of labour, although the tumour be great, we need be under little apprehension, for it will yield to the pressure of the child's head. But if at any time, during gestation, the distension be so great as to give much pain, then one or two punctures may be made, in order to let out the fluid, but this is very rarely necessary. Blisters applied to the vicinity of the part have been proposed, but they are painful and inconvenient. When the swelling depends on dropsy, diuretics are to be employed; but if the woman be pregnant, they must be used cautiously.

Pudendal hernia is formed in the middle of the labium. It may be traced into the cavity of the pelvis, on the inside of the ramus of the ischium, and can be felt as far as the vagina

extends. It differs farther from inguinal hernia, which also lodges in the labium, in this that there is no tumour discoverable in the course of the round ligament from the groin. It sometimes goes up in a recumbent posture, or it may by pressure be returned. A pessary has little effect in keeping it up, unless it be made inconveniently large. It is not easy to adapt a truss to it, but some good is done with a firm T-bandage, or one similar to that used for prolapsus ani. If it cannot be reduced, we must support it by a proper bandage which must not be drawn tight.

Sometimes the labia are naturally very small, at other times uncommonly large; one side may be larger than the other.

Laceration of the labia is to be treated like other wounds. When the hemorrhage is great, the vagina must be plugged, and a firm compress applied externally, with a proper bandage.

SECTION SEVENTH.

The most frequent disease to which the nymphæ is subject, is elongation. When the part protrudes beyond the labia, it becomes covered with a white and more insensible skin. But sometimes it is fretted, on which account, or from other causes, women submit to have the nymphæ cut away. This is done at once by a simple incision; but as the part is exceedingly vascular, we must afterwards restrain the hemorrhage, either with a ligature or by pressure. By neglect, the patient may lose blood, even *ad deliquium*. In some countries, this elongation of the nymphæ is very common. (1) In others, the nymphæ, together with the præputium clitoridis, are removed in infancy. (2) The nymphæ are subject to

(1) The females amongst the Bosjesmans have the nymphæ sometimes five inches long. Their colour is a livid blue, like the excrescence of a turkey. Vide Barrow's Travels in Africa, vol. I. p. 279

(2) On the shores of the Persian gulf, among the christians in Abyssinia, and in Egypt among the Arabs and Copts, girls are circumcised. Niebuhr says, that at Kahira, the women who perform this operation are as well known as midwives. Travels, vol. II. p. 250.—Dr. Winterbottom, in his account of Sierra Leone. vol. II. p. 239, says it is practised among the Mandingo, Foola, and Soosoo women.

ulceration, tumour, and other diseases, in common with the labia. Sometimes by falls, but oftener (3) in labour, the vascular structure of the nympha is injured, and a great quantity of blood is poured out into the cellular substance of the labia, producing a black and very painful tumour. (4) This may take place even before the child is expelled; and in a case of this kind, the midwife, mistaking this swelling for the protruding membranes, actually perforated the labium, and caused a considerable discharge of blood. (5) More frequently, however, the tumour appears immediately after delivery, (6) and sometimes is accompanied with violent bearing down pain; (7) but it has been known to advance so slowly, as not to attract attention for two days. Sometimes it is accompanied with great pain in the legs. At times the inflammation runs high, and the recto-vaginal septum

(3) M. Causaubon has inserted a memoir on this subject, in the 1st vol. of *Recueil Periodique*, which contains several useful cases. In one of these, the tumour was produced in the seventh month by a kick, and terminated fatally by hemorrhage.—In another given by Sedillot, the labia became prodigiously distended during labour, and the head of the child could not be touched. The labia were torn by the attendant. Afterward the child was delivered with the lever.—In cases related by Baudelocque, Brasdor, &c. the tumours were opened, and the vagina plugged, whilst the wound was stuffed with lint dipped in solution of alum, to prevent hemorrhage.

(4) In a case related by Mr. Reeve, the tumour which I suspect proceeded from the rupture of the nympha, was perceived first in perineo, but soon occupied all the left labium, which was enormously distended. The pain at first was so great as to cause syncope. The parts sloughed, and discharged pus and clotted blood. Bark was given, and she got well. *Lond. Med. Jour.* vol. IX. p. 119.

(5) Vide case by Dr. Maitland, in *Med. Comment.* vol. VI. p. 85.—Dr. Perfect relates a case, where it burst itself before the child was born, and discharged much blood, vol. II. p. 63.—In another, which ended fatally, the tumour burst after delivery, and discharged five pounds of blood. Vide *Plenk Elementa*, p. 111.—Case by M. Sedillot, in *Recueil Period.* tom. I. p. 260.

(6) Vide cases by Dr. Macbride in *Med. Obs. and Inq.* vol. V. p. 89.

(7) In Mr. Blagden's case, related by Dr. Baillie, the woman soon after delivery had violent bearing down pains, as if another child were to be born. A monstrous swelling appeared in the right labium, extending to the perinaeum. A large incision was made, which did not heal till the 21st day. *Med. and Physical Journal*, vol. II. p. 42.

sloughing, fæces are discharged by the vagina. (8) In the course of a short time the tumour bursts, and clotted and fluid blood is discharged. This process should be hastened by fomentations and poultices, and the pain be abated by opiates; but if it be very great, relief may be obtained, by making a small puncture in the inside of the labium, (9) and pressing out the blood, and then applying a proper compress to prevent farther effusion. If inflammation runs high, it is to be abated by the usual means.

SECTION EIGHTH.

The clitoris may become scirrhus, and even be affected with cancerous ulceration. In this disease, it is generally thickened, enlarged, (10) and indurated, and the patient complains of considerable pain. Presently ulceration takes place, and fungus shoots out. In no case of this kind that I have met with, has an operation been submitted to; and indeed, unless the whole of the diseased part can be removed, we must be satisfied with palliating symptoms. In one case, however, related by Kramer, (11) where the clitoris was enlarged, with cauliflower-like excrescences, and the right nymphæ indurated, the parts were successfully removed by the knife, after failing with the ligature, which produced insupportable pain.

The clitoris sometimes becomes preternaturally elongated; and if this takes place in infancy, and be accompanied with imperfect or confused structure of the other parts, the person may pass for an hermaphrodite. (12) This is said to be

(8) Vide Fichet de Flechy, *Observ.* p. 375. The patient was cured by introducing a compress into the vagina, and dressing the sore with digestive ointment

(9) Le Dran relates a case, where above 20 ounces of blood were evacuated by incision *Consultations*, p. 413.

(10) Mr. Simmons cut off a clitoris, which formed a tumour nine inches in length, and fourteen in circumference at the largest end. The circumference of the stem was five inches. *Med. and Phys. Jour.* vol. V. p. 1.

(11) Schmucker's *Miscel. Surg. Essays*, art. XXIII.

(12) Upon this subject, see Arnaud on hermaphrodites.

In a child aged three years, I found the *mons veneris* prominent, and, as well as the labia, covered with a considerable quantity of red hair. The

most frequent in warm climates; and in these, extirpation is sometimes performed. Haller assigns a cause for the enlargement.

SECTION NINTH.

The most frequent disease of the hymen is imperforation; in consequence of which the menses are retained, (13) the uterus is distended, and the orifice of the vagina protruded, so as sometimes to resemble polypus or a prolapsus uteri. (14) Even the perinæum may be distended, as if the head of a child rested on it; (15) and as pains like those of labour often come on, especially about the menstrual period, (16) such a case may, by inattention, be mistaken for parturition. (17) The sufferings of the patient are some-

labia were large and thick, like those of a grown woman, but shorter. Their inner surface was white and rugous, until near the orifice of the vagina, where the skin was red. At the top the labia devaricated, and showed a large clitoris, which hung down like the penis; it was upwards of an inch long, and about half an inch in diameter, and furnished with a thick wrinkled prepuce. It had a distinct glans, at the end of which was observed something like a perforation; but on raising it up, this was seen to be only the extremity of a deep sulcus, which extended all the way to the urethra, or orifice of the vagina. It resembled the male urethra slit up. The sides of this were formed by the nymphæ. A little before the orifice of the urethra, there was a longitudinal eminence, like the veru montanum. The vagina was shut up by the hymen. The uterus was large, like that of a girl of fourteen years of age, and was shaped like hers. The ovaria were of corresponding size; one of them lay on the psoas muscle, the other was loose in the pelvis. The tubes were fimbriated at their extremity, but in their course were knotted and serpentine, like the commencement of the vas deferens. The uterus was very vascular, and had an inflamed appearance. Its mouth was apparently impervious.

(13) The same effect may be produced, by a continuation of the skin being extended over the parts. It must be cut up. See a case by M. Larrey, in *Rapport General de la Société Philomatique*, tom. II. p. 86.

(14) Vide case of a patient of Dr. Chamberlain's, in *Cowper's Anatomy*.—Case by Mr. Fryer, in *Med. Facts and Obs.* vol. VIII. p. 132.

(15) Case by Mr. Sherwin, in *Med. Records, &c.* p. 279.

(16) Case by Mr. Kaeymer, in *Med. Annals*, vol. VI. p. 347. By Mr. Eason, in *Med. Comment.* vol. II. p. 187, and a variety of other cases. This, in every instance I have known, has been the greatest complaint.

(17) Dr. Smellie candidly acknowledges, that in one instance he took the protrusion of the hymen for the membranes of the ovum, forced

times increased by the addition of suppression of urine, (18) or pain in passing the fæces, (19) or convulsions.* Imperforated hymen is by no means uncommon, and the treatment is very simple, for the part is easily divided. (20) The retained fluid is thus evacuated, sometimes in very great quantity. It has very rarely the appearance of blood, being generally dark coloured, and pretty thick, or even like pitch. Sometimes febrile and inflammatory symptoms follow the operation. (21)

The hymen is sometimes perforated as usual, but very strong, so as to impede the sexual intercourse; yet in those cases impregnation has taken place, and the hymen has been torn, (22) or cut in the act of parturition. Conception may take place, although the hymen be imperforated.†

down by labour pains. These pains were accompanied with suppression of urine. He let out about two quarts of blood. Coll. 1. ii. i. c. 6.

(18) In a case related by Benevoli, the belly was very much swelled, and the urine suppressed. He attempted to pass the catheter, but without success. Next day he repeated his endeavour, and pushing with more force than prudence, considering his object, he ruptured the hymen, and immediately a great quantity of dark matter was evacuated, even to the extent of 32 pints.—See also Mr. Fryer's case.—Mr. Warner relates the case of a little girl, where the hymen was continued half way over the orifice of the urethra. The effects were at first attributed to stone in the bladder; but the nature of the case being made out, she was cured by dividing the hymen. Cases, p. 75.

(19) In a case by Mr. Bardy, the patient, who was 15 years of age, had every month, for some days, pain in the uterine region. The external parts were greatly protruded and stretched as in labour, and the nymphæ formed merely two lines. The anus was thrust backward and distended, and she passed the urine and fæces with great pain; the hymen from irritation was covered with scab, the health had suffered. Six pounds of thick gelatinous matter were evacuated by incision. Med and Chir. Review for September, 1807.

* Vide case by Mr. Fynney, in Med. Comment. vol. III. p. 194.

(20) In Mr. Fynney's case, the part to be divided was very thick; and in Dr. M'Cormick's case, the vagina seemed to be in part impervious. Med. Comment. vol. II. p. 183.—In general the membrane is thin.

(21) Vide Mr. Niven's case, in Med. Comment. vol. IX. p. 330. The symptoms gradually abated.

(22) M. Bandelocque mentions an instance where the hymen resisted, for half an hour, the strong action of the uterus. Note to section 341.

† Vide Ambrose Paré, Hildanus, cent. III. ob. 60.—Ruysch, ob. 22.—Mauriceau, ob. 439.

When the hymen is torn in coitu, some blood is evacuated, which in many countries is considered as a mark of virginity. But as even the presence or absence of a hymen cannot be looked upon as affording any certain proof relative to chastity, this test must be considered as altogether doubtful. When the hymen is ruptured, and there is an inflammation about the external parts, some have, in cases of alleged rape, considered the crime as proven. But whoever attentively examines the subject must admit, that these are very fallacious marks, that they may exist without any violence having been employed, and that a woman may have, if previously stupified, been violated without exhibiting any mark of injury. Practitioners therefore ought, in a legal question of this nature, to be cautious how they give any opinion, especially if they have not seen the person immediately after the crime has been committed.†

SECTION TENTH.

The perinæum is sometimes torn during the expulsion of the head or arms of the child. In many cases, the laceration does not extend farther back than to the anus, nor even so far. This is a very simple accident, and requires no other management than rest, and attention to cleanliness. But as the recto-vaginal septum is carried forwards and downwards, when the perinæum is put on the stretch previous to the expulsion of the head, it sometimes happens, that the laceration extends along this septum, and a communication is formed betwixt the rectum and vagina. In some cases, the sphincter ani remains entire, although the rectum be lacerated; in others it is also torn. This accident is attended with considerable pain and hemorrhage, and succeeded by an inability to retain the fæces, which pass rather by the vagina than the rectum. Prolapsus uteri is also, in some instances, a consequence of this laceration. This accident is sometimes produced by attempts to distend

† Vide Baudelocque l'Art, &c. sec. 342, et Foderé Med. Legale, tome II. p. 3.

the parts previous to delivery, or by the use of instruments; but it may also take place, even to a great degree, in a labour otherwise natural and easy, and in which no attempts have been made to accelerate delivery. Our first attention is to be directed to the repressing of the hemorrhage, which is sometimes considerable; and this is best effected by compression and rest, which favour the formation of coagula. Next, we are to consider how the divided parts may be united. Rest, and retaining the thighs as much together as possible, together with frequent ablution, in order to remove the urine, which sometimes, for a few days flows involuntarily, or the lochia and stools, are requisites in every mode of treatment. As there is nothing in the structure of the parts to prevent their reunion, it has very feasibly been proposed to induce a state of costiveness, and prevent a stool for many days. But with only one or two exceptions, this method has failed, the subsequent expulsion of the indurated fæces tearing open the parts, if adhesion had taken place. An opposite practice, that of keeping the bowels open, and the stools soft or thin, by gentle laxatives, has been much more successful, the parts in some instances healing in a few weeks. During this period, the stools are, at least for a time, passed sometimes involuntarily; but in other instances, they can from the first be retained, if the patient keep in bed. Sutures have been also employed, and ought certainly to be had recourse to, if reunion cannot otherwise be effected. If necessary, the edges of the divided parts must be made raw. It would appear that there is no occasion for putting a ligature in the recto-vaginal septum. It is sufficient to place two in the perinæum. When the sphincter ani remains entire, but the septum is torn, some have considered it necessary to divide that muscle; but others, with more reason, omit this practice. During the cure, some introduce a canula into the vagina, to support the parts, and others apply compresses dipped in balsams; but I believe it is better to apply merely a pledget, spread with simple ointment, to the

part. If the radical cure fail, the patient must use a compress, retained with a T-bandage. (23)

SECTION ELEVENTH.

The vagina may be unusually small. I have known it not above three inches long, and sometimes it is very narrow. If the size prevent coition, it may be enlarged with a tent of prepared sponge.* Should pregnancy take place before it be fully dilated we need be under no apprehension with regard to delivery; for during labour, or even long before it, relaxation (24) takes place. Sometimes the vagina is wanting or impervious, or all the middle portion of the canal is filled up with solid matter. More frequently, however, there is only a firm séptum stretched across behind the situation of the hymen, or higher up in the vagina; and this (25) it may be necessary to divide. In some cases, there is a great confusion of parts, and, indeed, it is impossible to describe the varieties of conformation; for the vagina may follow a wrong course, or communicate with the urethra, or the rectum (26) may terminate in the vagina, &c. Malformation does not always prevent pregnancy. (27)

(23) Upon this subject, vide La Motte's *Traité*; and cases and observations by Noel, Saucerotte, Trainel, and Sedillot, in the fourth and seventh vols. of the *Recueil Periodique*.—Dr. Denman mentions an instance where the perinæum was not torn up, but perforated by the head.

* Vide Van Swieten *Comment. in aph.* 1290.

(24) In a case where the vagina would not admit the point of the little finger, the child was delivered after eighteen hours labour. *Plenk Elementa*, p. 113.—See also Van Swieten.

(25) This may produce bad effects, from retention of the menses. M. Magnan relates the case of a girl, aged 22 years, who had been subject to monthly colics and suppression of urine. An incision was made through the membrane, and two pounds of blood let out. *Hist. de la Société de Med. pour 1776*, art. II.

(26) In this case the fæces do not always pass continually. The patient has been known, not to have a stool once in a fortnight, which probably depended on the fæces being indurated, and the communication small.

(27) In the 33d vol. of the *Phil. Trans.* p. 142, there is a case related, where there was a kind of double vagina, separated by a transverse septum or membrane. The orifices were very small. During labour, the pain was so great as to produce convulsions. She was delivered, by laying the two

SECTION TWELFTH.

In consequence of very severe labour, inflammation, followed by gangrene, may take place in the vagina. If the sloughs be small, then partial contraction of the diameter of the canal may take place, and produce much inconvenience from retention of the menses, (28) or during a subsequent labour; but in this last case, the parts gradually yield, and it is seldom necessary to perform any operation: the pain however, is sometimes excruciating till the part yields.*

In some instances the sloughs are so extensive, that the whole vulva is destroyed, or part of the urethra and vagina comes away, or general adhesion takes place, leaving only a small opening, through which the urine and the menses flow. Should this, by any means, be stopped up for a time, the discharges cannot take place; and sharp pains, or even convulsions, may be the consequence. Sometimes calculous concretions form beyond the adhering part.†

Whenever we have reason to expect a tender state of the parts after delivery, we must be exceedingly attentive; and if the vagina, or any other organ, be inflamed or tender, we must bathe the parts frequently, and inject some tepid water

passages into one.—Chapman relates a case of malformation, where the woman was impregnated, and in labour all the forcing was felt at the anus. From this an opening was made through into the vagina, and the child was born *per anum*. Portal mentions a girl, who had only a very small aperture at the vulva, for the evacuation of the urine; the menses came from the rectum; nevertheless, she became pregnant. Before delivery, the orifice of the vagina appeared, and she bore the child the usual way. *Precis de Chirurgie*, tom. II. p. 745.

(28) Richter in *Comment. Gotting.* tom. III. art. 2, relates a case of a girl aged 20 years, who for three years had been subject to violent pains about the sacrum, with tremors and syncope every month. The vagina was found to be closed at the upper part, in consequence, it was imagined, of a variolous ulcer in infancy. Fluctuation was felt in the vagina, when pressure was made with the other hand on the abdomen. The contraction was opened, and a quantity of blood let out.

* Harvey, *exercit.* LXXIII. p. 492.

† Vide *Pozos Traité*. p. 140.—Case by Mr. Purton, in *Med. and Phys. Jour.* vol. VI. p. 2.

gently, to promote cleanliness. Spiritous fomentations and injections are often of service, but they must not be thrown high. The urine must be regularly evacuated; and should a slough take place, we must, by proper dressings, prevent coalescence of the vaginal canal. (29)

SECTION THIRTEENTH.

The vagina may be contracted by scirrhus glands in its course, or induration of its parietes, which become thick and ulcerated, and communicate with the bladder or rectum. This disease, generally is preceded by, or accompanied with, scirrhus uterus, and requires the same treatment.

Foreign bodies in the vagina may produce ulceration, and fungous excrescences. The source of irritation being removed, the parts heal; but we must, by dressing and injections, prevent coalescence.

Polypous tumours may spring from the vagina, and are to be distinguished from polypus of the uterus by examination. The diagnosis betwixt polypus and prolapsus, or *inversio uteri*, will be afterwards pointed out. The cure is effected by the application of the ligature *more solito*.

SECTION FOURTEENTH.

The vagina may be inverted or prolapsed, without a *procidencia uteri*. The nature of this disease is similar to *prolapsus ani*. We find a fleshy substance protruding at the back part of the vulva, having an opening in the centre or toward one side. At first it is soft; but after some time, if the part has been irritated, it may inflame, indurate, or ulcerate. It is cured by a pessary, or by pregnancy;* but it sometimes returns after delivery. (30) In *prolapsus vaginæ*, the

(29) In some parts of Africa, the vagina is made impervious, in order to prevent coition. This operation is generally performed betwixt the age of eleven and twelve years. *Brown's Travels*, p. 549.

* *Pechlin*, lib. I. obs. 20.

(30) *Burton* relates a case, where the prolapsed vagina was mistaken for part of the placenta, and rudely pulled away, by which the vagina and bladder were torn. *System*, p. 170.

urethra must be turned out of its course, and even the bladder may be protruded. (31) If the catheter be required, it must be introduced, with its point directed backwards and downwards.

SECTION FIFTEENTH.

Water sometimes passes down from the abdominal cavity, betwixt the vagina and rectum, protruding the posterior surface of the vagina in the form of a bag; and the accumulation of water in the cavity of the pelvis is sometimes so great, as to obstruct the flow of the urine, or produce strangury. When the person lies down, the swelling disappears. If large, a candle, held on the opposite side, sometimes shows it to be transparent; and in every case, fluctuation may be felt. As this symptom is connected with ascites, the usual treatment of that disease must be pursued, and, if necessary, the water may be drawn off by tapping the abdomen, or rather by piercing (32) the tumour, which is to be rendered tense, by pressing it forward with the finger.

(31) Stollers relates a case, where this was complicated with calculi. These being removed, the parts were reduced, and a cure obtained. Cases, obs. 2.

(32) Mr. Henry Watson, in the *Med. Communications*, vol. I. p. 162, called the attention of practitioners to this disease. In a case he relates, he drew off in the month of June, four gallons of fluid, by tapping the vagina; and immediately after this she passed the urine freely, which she could not do before. She required again to be tapped in two months, and died in November. The left ovarium was found to be converted into a cyst, about the size of a sow's bladder, but it had not been touched by the trocar. In one case, he punctured with a lancet instead of a trocar, but this was succeeded by troublesome hemorrhage. The good effects of tapping are also seen in a case related by Mr. Coley, in *Med. and Phys. Journal*, vol. VII. p. 412. In this, two gallons of water were drawn off, and she continued well for five months, after which, dropsical symptoms returned, and although diuretics gave her some relief, yet she was at last cut off.—In the case of Mrs. Jarritt, related by Sir W. Bishop, in *Med. Commun.* vol. II. p. 360, pain was felt in the right side of the belly, after parturition, accompanied with tumefaction. In two years the vagina became prolapsed, the tumour being four inches in diameter. The tumour was punctured twice; the first time 46 pints, the second 51 were drawn off. Diuretics had no effect.—In a case related by Dr. Denman the woman was

SECTION SIXTEENTH.

Sometimes the intestine passes down betwixt the vagina and rectum, forming perineal hernia, or protrudes either at the lateral or posterior part of the orifice of the vagina, like the watery tumour; but it is distinguished from it by its firmer and more doughy feel, and by the manner in which it can be returned. By handling it, a gurgling noise may be heard, and sometimes indurated fæces may be felt. As the os uteri is pushed forward, and the posterior part of the vagina occupied by the hernary tumour, this complaint may put on some appearance of retroverted uterus. A case of this kind is mentioned by Dr. John Sims, in Mr. Cooper's work on hernia. This complaint is frequently attended with a bearing down pain; and on this account, as well as from its appearance, it has also been mistaken for prolapsus uteri. Sometimes the tumour does not protrude externally; but symptoms of strangulated hernia may appear, the cause of which cannot be known, unless the practitioner examine the vagina. In a case occurring to Dr. Maclaurin, and noticed by Dr. Denman, the patient died on the third day, and the disease was not discovered till the body was opened. Should a woman have vaginal hernia during pregnancy, we must be careful to return it before labour begin, for the intestine may become inflamed, and the fæces obstructed, by the head entering the pelvis; or the labour itself, if the head cannot be raised, and the intestine returned, may be impeded so much, as to require the use of instruments. Vaginal hernia requires the use of a pessary.

The rectum sometimes protrudes into the vagina. This is remedied by the sponge or globe pessary.

SECTION SEVENTEENTH.

Indolent abscess, or encysted tumours, may form betwixt the vagina and neighbouring parts. These are distinguished from hernia and watery tumours, by being incompressible, and

pregnant, and no operation was performed. On the fourth day after her delivery, after a few loose stools, she expired. *Introd. vol. I. p. 150.*

not disappearing by change of posture. The history of the disease assists the diagnosis, and examination discovers the precise seat and connexions of the tumour, though it cannot with certainty point out the nature of the contents. These tumours seldom afford obstinate resistance to delivery; by degrees they yield to the pressure of the head, but sometimes they return after delivery. The treatment is similar to that required in other cases of tedious labour, and the tumour should not be opened if we can deliver the woman otherwise. Even in the unimpregnated state, unless much inconvenience be produced, we ought not to perform any operation; but if the bulk of the tumour be so great as to impede the evacuation of the urine or fæces, an opening must be made, provided we are sensible that a fluid is contained.

SECTION EIGHTEENTH.

A very dreadful disease, which I have called spongoid tumour, may form either within the pelvis, or about the hip joint or tuberosity of the ischium, and spread inwards, pressing on the bladder and rectum, sometimes so much as to require the use of the catheter. We recognise the disease, by its assuming very early the appearance of a firm elastic tumour, as if a sponge were tied up tightly in a piece of bladder. Presently it becomes irregular, and the most prominent parts burst, discharging a red fluid, which is succeeded by fungous ulceration. But I have never known it proceed to this last stage within the pelvis. I know of no remedy, and would dissuade from puncturing, except in the very last extremity. I have never met with a case where it was necessary.

Varicose tumours of a knotted form, disappearing or becoming slack by pressure, and aneurismal tumours, distinguishable by their pulsation, may form about the vagina, and ought not to be interfered with, except by supporting them with a sponge in the vagina.

SECTION NINETEENTH.

The orifice of the vagina, together with the labia, and indeed the whole vulva, may be affected by erysipelatous in-

flamnation. This appears under two conditions; 1st, it may originate in the vulva, and spread inwards, even to the uterus; or 2dly, it may begin in the womb, and extend outwards. The parts are tumid, painful, and of a dark red colour. The second affection is most frequent after parturition; but the first may occur at any age, and under a variety of circumstances. It may be confined to the external parts alone, or it may quickly spread within the pelvis, and destroy the patient; for this disease generally terminates in gangrene. Vigarous* says, this state may be distinguished from abscess of the labium, by both labia being equally affected. The general history of the case, and proper examination, will point out the difference. When the disease is confined to the external parts, we may hope for a cure, and even for the preservation of the parts, by giving early, bark and opium internally, and applying to the surface pledgets dipped in camphorated spirit of wine, or vinous tincture of opium, made with half a drachm of opium to each ounce of wine. These applications, in general, agree better than saturnine lotions or fomentations.

A highly sensible or inflamed state of the parts may occur in nymphomania, or libidinous madness, either as a primary or secondary affection; and should the patient die under the disease, the parts are generally found black. Sometimes fomentations give relief, but oftener spirituous applications are beneficial. If the patient be feverish, she ought to be bled, and have cathartics administered, and be put on spare diet. Nauseating doses of tartar emetic, or full doses of the medicine, given so as to operate briskly, are of service, especially if followed by sleep. Strict and prudent attention must be paid to the mind.

SECTION TWENTIETH.

The vagina is always moistened with a fluid, secreted by the lacunæ on its surface. When this is increased in quantity, and changed in colour, it is known under the improper name of gonorrhœa. When this is unaccompanied with inflamma-

* *Maladies des Femmes*, tome II. p. 169.

tion, and independent of the application of venereal matter, it has been called the benign gonorrhœa, or is considered as a species of fluor albus. Others confine the term fluor albus, or leucorrhœa, strictly to a discharge from the inner surface of the womb; and in order to determine whether the secretion proceeds from the uterus or not, it has been proposed to stuff the vagina completely for some time, and then inspect the plug, to ascertain whether that part corresponding to the os uteri be moistened.* But this test is not satisfactory, and will seldom be submitted to.

When the discharge proceeds from the womb, it sometimes injures the function of that organ so much, or is dependent on a cause influencing the uterus so strongly, as to interfere with ménstruation, either stopping it altogether, or rendering it too abundant or irregular in its appearance; and in such cases the woman is generally barren. Very frequently, however, the menses do continue pretty regularly; and in those cases, the white discharge disappears during the flow of the menses. When the menses are obstructed, it is not uncommon for the fluor albus to become more abundant, and to be attended with more pain in the back about the menstrual period. When a woman who has leucorrhœa becomes pregnant, the discharge generally stops.

The fluor albus is almost always accompanied with a pain in the back and loins, and a feeling of weakness. Dyspeptic symptoms, and uneasy sensations, are very generally produced; the countenance is less healthy than formerly, the strength is reduced, and sometimes the patient is feverish and emaciated, or has œdematous swelling of the feet. The colour of the discharge is variable, being sometimes white or yellow without smell, and sometimes dark coloured and offensive. Should the woman die during the continuance of fluor albus, the uterus is found to have its cavity covered with mucous matter.

Fluor albus may be excited by the presence of a polypus in utero, or in consequence of disease of the womb; but in

* Chambon Malad. des Filles, p. 104.

such cases it is symptomatic, and is not at present to be considered. The idiopathic fluor albus may be produced by various causes, such as abortion, menorrhagia, frequent parturition, excessive venery, and whatever can weaken the action of the uterus. It was at one time supposed that it might also be produced by a bad state of the fluids of the body, a bilious cacochymy, a leucophlegmatic habit, catarrhal affections, passions of the mind, &c.

The vaginal discharge is attended with slighter effects, but the symptoms are similar in kind, with these differences, viz. that menstruation does not make it disappear, and it continues during pregnancy, nay, is even increased, or sometimes brought on by it. Pessaries may have the same effect, and sometimes the prolapsus uteri, for which they are used, causes it.

It is very difficult to distinguish betwixt venereal gonorrhœa, and fluor albus. In the former case, there is at first, at least, evident marks of inflammation, with a heat and smarting in making water, and the discharge has a purulent appearance. In the latter case, although all these symptoms may be present, yet there is much seldomer smarting or an inflamed state of the parts, and the discharge has more of a mucous appearance. Often, however, we must be determined in our judgment by concomitant circumstances. Topical applications, such as injections of solution of acetate of lead, sulphate of zinc, infusion of oak bark with opium, &c. readily cure the gonorrhœa.

We do not possess any medicine capable of operating directly on the uterus, and improving its action. We must therefore, employ such means as tend to invigorate the whole frame, and thus indirectly improve the action of the organs of generation; at the same time that we obviate an effect of the discharge, namely, weakness, for this may be an effect as well as a cause. When the disease is symptomatic of polypus, cancer, &c. we must attend to its primary cause; but in simple leucorrhœa, we may directly attempt the removal of the discharge, unless it have been of very long standing: in which

case, we have been advised to insert an issue;* but this is perhaps seldom necessary, for the disease does not yield suddenly. Emetics are of very considerable advantage, on account of their operation on the stomach and alimentary canal, and are accordingly advised by most writers.† Purges have also been used,‡ in order to carry off noxious matter; but they are only to be given, so as to keep the bowels regular,§ for brisk and repeated purging is hurtful.¶ Tonic medicines are also of much utility, and with them we may, with great advantage, employ the cold bath. The diet ought to be light and nourishing, and the patient ought not to indulge in too much sleep. Should these means prove ineffectual, we may, with much advantage, when there is no organic disease, make use of astringent injections, such as solution of alum, sulphate of zinc, &c. changing the ingredients, and varying the strength, till we find some form which is of benefit. These are of great benefit in vaginal discharges. In every case, the parts ought to be kept clean by regular ablution.

Various medicines, such as cicuta, uva ursi, balm of gilead, diuretic salts, calomel, electricity, arnica, &c. have been proposed; but they have very little good effect and sometimes do harm. By suckling a child, the discharge has in some instances been removed. Plasters and liniments have been applied to the back, and sometimes relieve the aching pains. Opiates are occasionally required, on account of uneasy sensations.

SECTION TWENTY-FIRST.

The bladder is subject to several diseases. The first I shall mention is stone. This excites very considerable pain

* Vigarous *Malad. des Femmes*, tome I. p. 257.

† Smellie, vol. I. p. 67.—Vigarous, tome I p. 261.—Mead, *Med. Precepts*, chap. xix. sect. 3d.—Denman, vol. III. p. 104.—See also Ettmuller, Riverius, &c. &c.

‡ Chambon *Malad. des Filles*, p. 107.—Mead, *Med. Precepts*, chap. xix. section 3d.

§ Stoll *Prælectiones*, tomus II. p. 385.

¶ Vigarous *Malad. des Femmes*, tome I. p. 261.

in the region of the bladder, considerably increased after making water. There is also irritation about the urethra, with a frequent desire to void the urine; but it does not always flow freely, sometimes stopping very unexpectedly. The urine deposits a sandy sediment, and is often mixed with mucus. These symptoms lead to a suspicion that there is a stone in the bladder, but we can be certain only by passing a sound. By means of soda, the warm bath, and opiates, much relief may be obtained, and very often the stone may be passed, for the urethra is short and lax. But when these means fail, an operation must be performed. This has been done during pregnancy,* but is only allowable in cases of great necessity. Sometimes the stone makes way, by ulceration, into the vagina.† It has even been known to ulcerate, through the abdominal integuments‡. In many cases the symptoms of stone are met with, although none can be found in the bladder. This is most frequently the case with young girls, previous to the establishment of the catamenia, or with women of an irritable habit. There is no organic disease, nor have I ever known it, in such people, end in a diseased structure of the bladder or kidneys; indeed, they rarely complain of uneasiness above the kidneys. I have tried many remedies, such as soda, uva ursi, narcotics, antispasmodics, tonics, and the warm and cold bath, but cannot promise certain relief from any one of these. (33) In process of time, the disease subsides and disappears.

Induration, or scirrhus of the bladder, produces symptoms somewhat similar to calculus, but there is a greater discharge of morbid mucus with the urine; and blood with purulent matter is discharged, when ulceration has taken place. No stone can be found, but the bladder is felt to be hard and

* Deschamps *Traité de l'Oper. de la Taille*, tome IV. p. 9.

† Hildanus, cent. I. obs. 68 and 69.

‡ Vide Case by M. Caumond in *Recueil Period.*

(33) In a case of this kind, described by Mr. Patton as a spasmodic affection of the neck of the bladder, calomel appeared to cure the complaint. *London Med. Journal*, vol. X. p. 360. The use of the bougie may be proper.

thick. Sometimes it is much enlarged with appearances, giving rise to an opinion, that the uterus is the part principally affected. (34) The scirrhus and ulceration may extend to the uterus and vagina. In this disease we must avoid all stimulants, and put the patient on mild diet; avoid every thing which can increase the quantity of salts in the urine; keep the bowels open, with an emulsion containing oleum ricini; and allay irritation by means of the tepid bath and opiates. Mercury, cicuta, uva ursi, &c. with applications to the bladder itself, have seldom any good effect, and sometimes do harm. Polypous tumours (35) may form within the bladder, producing the usual symptoms of irritation of that organ.

In consequence of a severe labour, or the pressure of instruments, the neck of the bladder may become gangrenous, and a perforation take place by sloughing. The woman complains of soreness about the parts, and does not void the urine freely. In five or six days the slough comes off, and then the urine dribbles away by the vagina. In all cases of severe labour, and indeed in every case when the urine does not pass freely, and at proper intervals, and especially if there be tenderness of the parts, we must evacuate the water, in order to prevent distension and farther irritation of the bladder; and the parts must, if there be a tendency to slough or to ulcerate, be kept very clean, and be regularly dressed, in order to prevent improper adhesions. If the bladder should give way, we must try, by keeping in an elastic catheter,* to make the urine flow by the urethra, and then perhaps the

(34) Morgagni relates an important case, where there was a hard painful tumour in the hypogastric region, accompanied with fluor albus, uterine hemorrhage, and stillicidium of urine. After death, the bladder was found very large and scirrhus, with two large bodies in the cervix, preventing the urine from being retained. The uterus was diseased only in consequence of its vicinity to the bladder. *Epist. XXXIX. art. 31.*

(35) Of this disease I have never seen an instance; but Dr. Baillie mentions a case, in which the greater part of the bladder was filled with a polypus. *Morbid Anat. p. 298.*

* This succeeded in a very bad case related by Sedillot, *Recueil Perierod. tome I. p. 187.*

part may heal, but we have no great reason to expect it. If there be no tendency in the wound to close up, it may be worth while, before the margins of the opening cicatrize, to try the effect of laying open the urethra, as in the operation of lithotomy, and thus union may take place in the whole extent. When the margins heal, and an opening is left, we must, by introducing a sponge, or some soft but pretty large substance like a pessary, into the vagina, close it up, at least so far as to make the woman more comfortable. In a curious case I met with, there was an attempt by nature, to plug up the opening. (36) Puzos justly remarks, that it is always the bladder, and not the urethra, that suffers.

Sometimes, after a severe labour, the woman is troubled with incontinence of urine, although the bladder be entire. This state is often produced directly by pressure on the neck of the bladder; sometimes it is preceded by symptoms of inflammation about the pelvis, and, in such cases, the os uteri is often found afterwards to be turned a little out of its proper direction, and the patient complains much of irregular pains about the hypogastrium and back. Time sometimes cures this disease. The cold bath is useful, unless it increase the pain; and in that case, the warm bath should be employed. Benefit is derived from the use of a sponge pessary.

The bladder may descend, in labour, before the uterus, producing much pain; or it may prolapse for some time previous to labour, attended with pains resembling those of parturition, and sometimes with convulsive or spasmodic affections. (37) When the prolapsus vesicæ takes place as a

(36) The patient to whom I allude had, I understood, four years before her death, been delivered with the forceps, and soon afterwards had incontinence of urine. I found a large perforation in the bladder, exactly resembling the fauces without an uvula. The uterus was a little enlarged and indurated; and its mouth, which was ulcerated and fungous, lay in this opening, projecting into the bladder, and closing up the communication betwixt the bladder and vagina.

(37) In a case related by Sandifort, the suppression of urine was always attended with convulsive cough. Lib. I. c. 3.—And in a case related by Dr. J. Hamilton, where prolapsus took place before parturition, the muscles of the body were spasmodically agitated. Cases, &c. case 1.

temporary occurrence during labour, or antecedent to parturition, we must be careful not to mistake the bladder for the membranes, for thus irreparable mischief has been done to the woman. If the patient be not in labour, the uneasiness is to be mitigated by keeping the bladder empty, and allaying irritation with opiates, and taking a little blood if feverish or restless. If labour be going on, the bladder must likewise be kept empty, and may, during a pain, be gently supported, by pressing on it with a piece of sponge in the vagina, by which the bladder is preserved from injury. In the unimpregnated state, it sometimes descends betwixt the vagina and pelvis, so as to form a tumour within the vagina, or at the vulva. In a case dissected by my brother, the bladder was found to form a hernia on both sides of the pelvis, hanging like a fork over the urethra. This is called a *hernia* vesicalis*, and is often attended with suppression of urine. If this be inattentively examined, it may be taken for prolapsus uteri; but it will be found to diminish, or even disappear, when the urine is voided, and, by pressure, the urine may be forced through the urethra. The *hernia vesicalis* is to be remedied by the use of a globe pessary or sponge. Sometimes it is combined with calculus in the bladder. In this case, it has been proposed to open the bladder, extract the stone, and keep up a free discharge of urine through the urethra, in order to allow the communication with the vagina to heal. Deschamps advises, that the opening should be made near the pubis, and not at the posterior part of the tumour, lest that part of the bladder be cut, which, when the tumour is reduced, would communicate with the abdominal cavity.

SECTION TWENTY-SECOND.

Excrescences may, notwithstanding the opinion of Morgagni, form in the course, or about the orifice of the urethra, (40) and generally produce great pain, especially in

* Vide the Memoirs and Essays of Verdier and Sabbatier, and Hoin. Sandifort, Diss. Anat. Path. lib. I. cap. iii. and Cooper on Hernia, part II. p. 66.

(40) Mr. Sharp mentions a case, where they grew in small quantity

making water; on which account, the disease has sometimes been mistaken for a calculous affection. The agony is sometimes so great, as to excite convulsions, and it is not uncommon for the patient to have an increase of her sufferings about the menstrual period. When excrescences grow about the orifice of the urethra, they are readily discovered; but when they are high up, it is much more difficult to ascertain their existence. Dr. Baillie* says, they cannot be known, but by the sensation given by the catheter passing over a soft body. They, however, in one case, were discovered, by turning the instrument to one side, so as to open the urethra a little. (41) When their situation will permit, it is best to extirpate them with the knife or scissors; but sometimes they have yielded to the bougie, though they had returned after excision.† The removal of large excrescences, has occasionally been attended with very severe symptoms. (42) The daily use of the bougie, for some time after extirpation, is of service. (43) Sometimes

upon the orifice, producing excruciating torment till they were extirpated. Critical Inq. p. 168.

* Morbid Anatomy, p. 321.

(41) In the instance related by Mr. Warner, the urine was voided in drops with great pain, especially about the menstrual period, and she sometimes even had convulsions. He dilated the urethra, by inclining the catheter to one side, and thus saw two excrescences near the upper end. He divided or laid open the urethra, and cut off the excrescences successfully with scissors. Cases, p. 309.

† Broomfield's Surgery, vol. II. p. 296.

(42) In the patient of Mr. Hughes, the disease was taken at first for prolapsus uteri, for there was a substance filling the os externum, and appearing without the vulva. It was a spongy excrescence from the whole circumference of the meatus. It was drawn out with a thread passed through it, and then cut off. Strangury, with pain above the pubis, and fever, took place, on which account the catheter was introduced. Suppression of urine repeatedly occurred; and as it was often difficult to introduce the catheter, the semicupium was employed, and always with advantage; but once after it, she became faint, and the limbs were convulsed. A stricture being suspected at the upper part of the urethra, a bougie was introduced, and kept in the canal, which removed the symptoms. Med. Fact. and Obs. vol. III. p. 26.

(43) In Mr. Jenner's case, the irritation of the bladder was great, and the menses were irregular. A fungus was found filling the orifice of the

the urethra becomes in part, or totally inverted, (44) forming a tumour at the vulva, attended with difficulty and pain in voiding urine. A slight inversion may be relieved by a bougie; when there is a considerable prolapsus, the part must be cut off. The urethra is sometimes contracted by a varicose state of its vessels, or by a stricture, but these are not common occurrences. In continued irritation of the urethra, with difficulty of voiding water, the bougie is often of great service, even although there should be no contraction of the canal itself. Sometimes the urethra is preternaturally dilated, (45) but this seldom causes incontinence of urine.

SECTION TWENTY-THIRD.

The uterus may be larger than usual, or uncommonly small, (46) or it may be altogether wanting. (47) Unless

urethra; this was cut off, and the bougie used for an hour every day for a fortnight; a little before the extirpation, a hemorrhage took place from the excrescences. *Vide Lond. Med. Journal*, vol. VII. p. 160.

(44) M. Sernin relates a case of a girl eleven years of age, who from her fifth year had been subject to frequent attacks of difficulty in voiding the urine. He had an opportunity of examining her after a violent attack, and found a cylindrical body, 4 inches long, projecting from the vulva; and whenever she attempted to make water, this projection swelled up. It was amputated with success. *Recueil Period. tom. XVII. p. 304.*

(45) In Dr. Chamberlain's patient, who had the hymen imperforated, the urethra was so dilated as to admit the finger; and Portal found it, in an analogous case, dilated so as to form a cul-de-sac, admitting the point of the thumb. *Cours d'Anat. Medicale*, tom. III. p. 476.

(46) Morgagni mentions a porter's wife in whom the uterus was found not above an inch long, and without any ovaria. The pudendum was extremely small, and there was scarcely any appearance of a clitoris. In the *Phil. Trans.* for 1805, there is a case where the uterus of a woman, 29 years of age, was not larger than in the fetal state, and scarcely any appearance of ovaria. She ceased to grow at ten years of age, had no hair on the pubis, never menstruated, and had an aversion to men. I have seen the uterus of the adult not larger than that of a child: the woman never menstruated, and had very flat breasts.

(47) Columbus dissected a woman who always complained of great pain in coitu. The vagina was very short, and had no uterus at its termination.

Fromondus relates an instance, where the place of the os externum was occupied with a cartilaginous substance.

these circumstances be combined with some deficiency, or unusual conformation of the external parts or vagina, the peculiar organization is not known till after death. It is, however, not uncommon for the external parts to be very small, when the uterus is of a diminutive size; and when it is altogether wanting, the vagina is either very short, or no traces of it can be found. In either of these cases, no attempts should be made to discover a uterus by incisions, unless, from symptoms of accumulation of the menses, we are certain that a uterus really exists.*

The uterus may be double: (48) in this case there is sometimes a double vagina, but generally only one ovarium and tube to each uterus. This conformation does not prevent impregnation.

The uterus is sometimes divided into two, by a septum stretching across at the upper part of the cervix;† or the os uteri is almost, or altogether shut up, (49) by a continuation of the lining of the womb or vagina, or by adhesion, conse-

Morgagni was consulted by a barren woman, whose vagina was only a third part of the usual length, and its termination felt firm and fleshy. He advised a dissolution of the marriage.

M. Meyer, in Schmucker's Essays, mentions a case where the vagina and uterus were wanting, but the ovaria existed. The labia and clitoris were small, and there were no nymphæ. Mr. Ford dissected a child who had no vagina, uterus, or ovaria. The urethra and rectum terminated close to each other. *Med. Facts*, vol. V. p. 92.

* Nabothus mentions a rash operator, who undertook, by incision, to find the uterus; but after cutting a little, he came to some vessels which obliged him to stop.

(48) Vide *Hist. de l'Acad. de Sciences*, 1705, p. 47.—Haller *Opusc. Path.* 60.—Acrell's cases.—Purcel in *Phil. Trans.* LXIV. p. 474.—Canestrini in *Med. Facts*, vol. III. p. 171.—Valisneri met with a double uterus and double vulva. *Opera*, tom. III. p. 338.—Dr. Pole describes a double uterus in the 4th vol. of *Mem. of Medical Society*, p. 221.

† Baillie's *Morbid Anatomy*, chap. xix.

(49) Littre found it almost closed, by a continuation of the inner surface of the vagina, *Mem. de l'Acad. de Sciences*, 1704, p. 27; and in the seventh month of pregnancy, closed by a glandular substance, 1705, p. 2.—Morgagni found it shut with a membrane. *Epist.* XLVI. art. 17.—Boehmer quite shut up. *Obs. Anat. fasc.* 2, p. 62.—Ruysch saw it so small, as scarcely to admit a pin; and Sandifort so well closed, that nothing but air could be forced through it. *Obs. Anat. Path. lib.* II. c. ii. p. 67.

quent to ulceration, or by original conformation; and in this last case, the substance of the os uteri is sometimes almost cartilaginous. The menses either come away more or less slowly, according to the size of the aperture, or are entirely retained when there is no perforation. As long as the menses are discharged, nothing ought to be done; but if they are completely retained, and violent and unavailing efforts made for their expulsion, an opening must, as a matter of necessity, be made from the vagina. In such cases the uterus has been tapped with success;† but it has also happened, that fatal inflammation has succeeded the operation.

The vessels are sometimes enlarged; and I have seen the spermatic veins extremely varicose, in an old woman who had been subject to piles; but I do not know that any particular inconvenience results from the veinous enlargement.

SECTION TWENTY-FOURTH.

The uterus is subject to inflammation; but in the unimpregnated state, it is not common for the womb to be the original seat of inflammation. After parturition, it is very frequently inflamed, and this will hereafter be considered. Inflammation is discovered by pain in the hypogastric region, accompanied with tension, and the part is tender to the touch; there is acute pain stretching to the back and groins; the bladder is rendered irritable; and acute fever accompanies these symptoms. Blood-letting, purges, fomentations and blisters, are to be used as in other cases of peritoneal inflammation. Wounds of the uterus are dangerous, in proportion to the inflammation they excite. In the unimpregnated state, this accident is rare.‡

† The menses being retained, and great pain excited, they were let out with a trocar by Schutzer. Vide Sandiford, p. 69.

‡ In one instance the woman was murdered, by thrusting a piece of glass up the vagina; and Haller notices a fatal case, in which a piece of lead was thrust into the uterus.

SECTION TWENTY-FIFTH.

The uterus may, from irritation, become ulcerated like any other part; purulent matter is discharged, the woman feels pain in coitu, or when the uterus is pressed, and sometimes the finger can discover the ulcer. Simple ulceration is very rare, and, I apprehend, will always heal, by keeping the part clean with mild injections. Ulceration from morbid poison is more frequent. Of this kind is the phagedena, a most obstinate and dreadful disease of the womb, which begins about its mouth, and goes on, gradually destroying its substance, until almost the whole of it be removed; and sometimes, though not often, it spreads to the neighbouring parts. This disease is marked by pain in the region of the uterus, copious fetid discharge, small but frequent pulse, wasting of the flesh, and sometimes swelling of the inguinal glands. Examination, per vaginam, discovers the destruction which has taken place, and how far it has proceeded. It also ascertains, that the part which remains is not enlarged, and in this it differs from a cancerous uterus. The rapidity of the destruction is various in different cases. It is very difficult to cure this ulcer, or even to check its progress. Sometimes mercury has effected a cure, either by itself, or combined with cicuta; or hyocyamus, or other narcotics, have been given alone. Nitrous acid occasionally gives relief, and, when greatly diluted, forms a very proper injection. A solution of nitrate of silver, or oxymuriate of mercury, is also a good topical application. Should the pains be great, tepid decoction of poppies, or water with the addition of tincture of opium, will be of service as an injection. Fomentations to the lower belly, and friction with camphorated spirits on the back, also give relief; but very frequently opium, taken internally, affords the most certain mitigation of suffering.

There is another kind of ulcer, which attacks the cervix and os uteri. It is hollow, glossy, and smooth, with hard margins; and the cervix, a little beyond it, is indurated, and somewhat enlarged, but the rest of the uterus is healthy. The discharge is serous, or sometimes purulent. The pain is pret-

ty constant, but not acute; and the progress is generally slow, though it ultimately proves fatal, by hectic. In this, and all other diseases of the uterus, the morbid irritation generally excites leucorrhœa, in a greater or less degree; but examination ascertains the morbid condition of the part. Although this disease be very different in its nature from the former, yet the mode of treatment is very much the same. Sometimes material benefit is derived from the regular use of a solution of some saline purgative, or a laxative mineral water, such as that of Harrowgate or of Cheltenham. This is especially the case, when the ulcer is small, or when the part is only indurated, ulceration not having yet taken place. In this stage, the cervix is felt hard and sensible to the touch, and there is leucorrhœa and pain in the uterine region. Some may consider this disease as a species of cancer, but the ulcer is never fungous.

Venereal ulceration may, although the external parts be sound, attack the uterus, producing a sense of heat with pain, which, in general, is not very great, and is not constant. There is sometimes, at first, very little discharge; but if the disease be allowed to continue, fetid purulent matter comes away. The ulcer is at first small, and there is no hardness about the os uteri, nor is it perceived to be dilated; but it is painful to the touch, and sometimes bleeds after coition. In process of time, the ulcer spreads, and may destroy a great part of the womb and bladder, and occasion fatal hectic. The history of the patient may assist the diagnosis. The cure consists in a course of mercury.*

SECTION TWENTY-SIXTH.

Scirrhus-cancer attacks any part of the uterus, but especially the cervix. It may take place in the prime of life, but it is most frequent about the time of the cessation of the menses. It begins with darting pains in the hypogastrium, aching in the back, dull pain about the upper and inner part of the thighs, with a sense of bearing down, together with dysuria,

* Vide Med. Comment. Vol. XIX. p. 257.—Pearson on Cancer, p. 119.

and sometimes stinging pain betwixt the pubis and sacrum. There is a leucorrhœal discharge from the vagina, or uterus, or from both. The patient is troubled with flatulence, and sometimes with vomiting. The general health suffers, the countenance becomes sallow, the pulse quickens, the strength declines, and the body wastes. If the menses have not entirely ceased, they become irregular, or profuse. Presently a fœtid, purulent or bloody matter, is discharged, which indicates that an abscess has burst, and the disease has proceeded to ulceration. Repeated hemorrhages are now apt to take place, and hectic is established. The pain is constant, but subject to frequent aggravations, and the weakness rapidly increases. At length the pain, fever, want of rest, discharge, and loss of blood, completely exhaust the patient; and death terminates, at once, both her hopes and sufferings.

At first, by examination per vaginam, the uterus is felt somewhat enlarged, and the cervix lengthened, thickened, and more sensible to the touch, a circumstance which causes pain in coitu. In some time after this, the os uteri is turgid, as if it contained a small abscess, and presently it is felt to be ulcerated and fungous; but sometimes the fungi are less perceptible, deep excavations being formed, the sides of which, however, after death, are found to be fungous.

The uterus is sometimes very much enlarged before ulceration takes place; but in other cases, the augmentation is much greater after ulceration, than before it; or the morbid affection may be very much confined to the cervix uteri. (50) In some cases, the womb acquires a size greater than the head of a child; in others, it is not above double its usual

(50) Vide Stalpart Vander Wiel, obs. 87.—Segerus in *Mis. Cur.* 1671, obs. 121. Notwithstanding these cancerous excrescences about the os uteri, a woman may conceive. Dr. Denman relates a case where there was a large excrescence in the gravid state, with profuse bleeding. The head of the child was lessened, but the woman died undelivered. Vol. II. p. 65. When the os uteri has been affected with scirrhus, and the woman has conceived, the uterus has sometimes been ruptured, or the woman died undelivered. Hildanus, cent. 1. obs. 67. Horstius *Opera*, tom. II. lib. 2. obs. 5. Blancard *Anat.* p. 233. *Hist. de l'Acad. de Sciences*, 1705, p. 52.

magnitude, or I have seen a scirrhus tumour form in the uterus, and enlarge alone, whilst the rest of the uterus was nearly natural. In some, the disease proves fatal very early, in others, great devastation takes place, and the bladder (51) or rectum* is opened. In most cases, the vagina becomes hard and thickened, or irregularly contracted with swelled glands, in its course.

On examining the uterus after death, its substance is found to be thickened and indurated, and sometimes its cavity is enlarged. The substance is of a whitish or brownish colour, intersected with firm membranous divisions; and betwixt these are numerous cysts, the coats of which are thick and white. They contain a vascular substance, which, when wiped clean, is of a light olive colour. In proportion as the disease advances, some of the cysts enlarge, and thicken still more, and, when opened, are found to contain a bloody lymph, and to have the inner surface covered with a spongy vascular substance, similar to that which fills the small cysts, but rather more resembling fungus. Presently some of these cysts augment so much as to resemble abscesses, though they are not properly speaking abscesses, and soon afterwards they burst.

It is extremely rare for a cyst to burst, or fungi to shoot out on the exterior surface of the uterus, which is covered with the peritoneum; but sometimes all the cavity of the womb is lined with irregular fungi, or very vascular substance. Occasionally the tubes† and ovaria participate in the disease. The position of the uterus is often natural, but some-

(51) Le Dran attended a patient who had all the symptoms of scirrhus uterus, and, by examination, fungous excrescences were found shooting down into the vagina. The pain was continual, and could only be mitigated by the constant use of opium. Urine was discharged by the vagina, and after death, the bladder was found to be perforated. The fundus and body of the uterus were not much diseased.

* M. Tenon found, in a case of cancerous uterus, all the posterior part of the womb ulcerated, the rectum diseased, and a communication formed betwixt them.

† Vide Prochaska Annot. Acad. fasc. 2d.

times it is inclined to one or other side, or approaches to a state of retroversion.

This is a very hopeless disease, but still something may be done to check its progress, or mitigate its symptoms. When uneasy sensations, about the cessation of the menses, indicate a tendency to uterine disease, we find advantage from the insertion of an issue in the arm or leg, the use of laxative waters,* and spare diet. (52) When there is much sense of throbbing, heat, or pain about the pelvis, cupping glasses applied to the back are occasionally of service. When the disease has evidently taken place, we must still avoid such causes as excite action in general; keep the parts clean, by injecting decoction of camomile with hemlock or opium; allay pain by anodynes; and attend to the state of the bowels. Mercury, sarsaparilla, aconitum, cicuta, &c. have been given internally, but have seldom a good effect. It has been proposed to produce, with an extracting instrument, a prolapsus uteri, and then cut off the protruded womb; but this operation is not likely to be resorted to.

SECTION TWENTY-SEVENTH.

Tubercles are common in the uterus, insomuch that M. Bayle says, that in seven months he met with fourteen cases. They consist at first of fleshy matter, but in process of time become more like cartilage, or even bony, especially on their surface.* On examining the tumour, it is found to be intersected with membranous divisions; and a section exhibits a pretty compact granulated surface. A tubercle may take place in one spot, and all the rest of the uterus may be

* Ræderer relates a case where scirrhus swelling was cured by keeping the bowels open, and giving every third evening, from ten to twenty grains of calomel.—Haller Disp. Med. Tomus IV. p. 670.

(52) Absolute abstinence has been recommended by Pouteau, *Œuvres* Post. tom. I. p. 105. He relates a case, which was cured by confining the patient to *eau de glace*.—Mr. Pearson, p. 113, gives two successful cases. In the first, the uterus was enlarged and retroverted, but by very spare diet was restored to its natural state.

* Sandifort Obs. Anat. Path. lib. I. cap. viii.—Bayle in *Jour. de Méd.* tome V.—Murray de Osteosteatomate; p. 14, et seq.

healthy, and nearly of the natural size. The magnitude of the tubercle is very variable, and it may either project on the outer surface, or within the cavity of the womb; and in this last case, the adhesion to the surface of the cavity is generally slight† after the tubercle has fully projected. In this it differs, even in its most detached state, from polypus, which is attached not by cellular substance, but by a pedicle. Sometimes there are a great many tubercles, which are found in various stages of projection, and the uterus may become greatly enlarged and very irregular externally.‡ I have never seen the tubercle end in ulceration, nor the substance of the uterus, although thickened, have abscess formed in it. The effects of this disease are a pain in the back, and sometimes in the hypogastrium, which is swelled if there be much enlargement of the womb, dyspeptic symptoms, leucorrhœa, and at length feverishness and gradual loss of strength. The progress is generally slow, and the pain and other symptoms less acute than in cancerous uterus. Sometimes one or more tubercles are thrown off, with pains like those of labour.

The antiphlogistic regimen should be pursued in moderation. The bowels especially should be kept open, and every source of irritation removed. Women may live a long time, even although these tumours acquire considerable magnitude.

Sometimes the whole uterus is a little enlarged, and changed into a white cartilaginous substance, with a hard irregular surface; or it may be enlarged and ossified, (53) and these ossifications may take place even during pregnancy.§ Stea-

† Baillie's Morbid Anatomy, chap. xix.

‡ I have found the uterus as large as a child's head of a year old, with many projections and tubercles.—Peyer has a similar case, *Parerg. Anat.* p. 131.

(53) Vide *Mem. de l'Acad. de Chirurg.* Lieutaud relates a case of a woman who had a tumid belly, and complained of great pain. The womb was not much larger than usual, but it was almost bony. *Hist. Anat. Med.* p. 320.—Grandchamp found an osseous tumour, as large as the fist, inclosed in a sac, betwixt the uterus and bladder. It produced constant ischuria, relieved only by lying on the back. *Med. and Phys. Journal*, vol. III. p. 587.

§ Vide *Observ. on Abortion*, 2d edition, p. 37.

tomatous or atheromatous tumours of various sizes,* or sarcomatous† or scirrhus-like‡ bodies, may be attached to the uterus. All these diseases sometimes at first give little trouble. Even their advanced stage has no pathognomonic mark, by which they can be discovered, as they produce the usual effects of uterine irritation. I must also add, that they are very little under the power of medicine. The most we can do, is to palliate symptoms, by which, however, we greatly meliorate the condition of the patient.

SECTION TWENTY-SEVENTH.

Earthy concretions are sometimes formed in the cavity of the uterus, and produce the usual symptoms of uterine irritation; and Vigarous considers them as very apt to excite hysterical affections. As in the bladder of urine, the constant presence of a calculus tends to thicken its coats; so the irritation of a stone in the uterus can excite a disease of the substance of the womb, and produce ulceration, which may extend to the rectum. The disease in question is very rare, and can only be discovered by feeling the concretion with the finger, or a probe introduced within the os uteri, which is sufficiently open to permit of this examination. Nature, it would appear, tends to expel the substance; (54) and we ought to cooperate, if necessary, with this tendency, and must also relieve suppression of urine,§ or any other urgent symptom which may be present.

* Vide Rhodius, cent. III. ob. 46.—Bœhmer Obs. Anat. fasc. 2d.—Stoll Ratio Med. part II. p. 379.

† Vide Friedius, in Sandifort's Observ. lib. I. c. viii. and a case by Sandifort himself, where the tumour adhered by a cord, lib. IV. p. 113.

‡ Baader Obs. Med. ob. 29, p. 170.

(54) Gaubius relates a case, where it was complicated with prolapsus uteri. After a length of time, severe pains came on, and in an hour a large stone was expelled; next day, a larger stone presented, but could not be brought away until the os uteri was dilated. From time to time after this, small stones were expelled, but at last she got completely well.

§ This proved fatal in a child of five years old.

SECTION TWENTY-EIGHTH.

Polypous tumours are not uncommon, and may take place at any age; they are not, however, often met with in very young women. They always affect the health, producing want of appetite, dyspeptic symptoms, uneasiness in the uterine region, a variable swelling of the abdomen, aching pain in the back, and a dragging sensation at the groins. When these symptoms have continued some time, the strength is impaired, and the pulse becomes more frequent. At first, there is generally a discharge like leucorrhœa; but at length blood is discharged, owing to the rupture of some of the veins of the tumour, or sometimes from the uterine vessels themselves. These symptoms, however, cannot point out, to a certainty, the existence of a polypus: we must have recourse to examination, by which we discover that the uterus is enlarged, its mouth open, and a firm but generally movable body within it. If the os uteri have not yet opened, so as to admit the finger, the diagnosis must be incomplete.

Efforts are made, in process of time, to expel the tumour; the body of which passes into the vagina, (55) and sometimes occasions retention of urine. (56) The pedicle remains in utero, and the bad consequences formerly produced still continue, except in a few cases, where the tumour has dropped

(55) In a case, which occurred to the late Mr. Hamilton of this place, the polypus was expelled by labour pains, but the woman died exhausted.—In a case, related by Vater, it was expelled when the woman was at stool. Haller, *Disp. Chir.* tom. III. p. 621. See also a case in the same work, p. 641. by Schunkius.—In the patient of Vacoussain, the polypus was expelled after severe pain; its pedicle was felt to pulsate very strongly, but a ligature being applied, the tumour was cut off. Instantly the ligature disappeared, being drawn up within the pelvis, but on the third day it dropped off. *Mem. de l'Acad. de Chir.* tom. III. p. 533.

(56) Vide case by Vater, in Haller, *Disput. Chir.* tom. III. p. 621.—In the case furnished by M. Espagnet, an attempt was made to introduce the catheter; but a straight one being employed instead of a curved one, or an elastic catheter, it was found necessary previously to make an incision in the fore part of the polypus, which had protruded. *Mem. de l'Acad. de Chir.* tom. III. p. 531.

off,* and the patient got well. In such cases, it has been supposed that the os uteri acted as a ligature; and to the same cause is attributed the bursting of the veins, which produce, in many instances, copious hemorrhage. But although hemorrhage be most frequent after the polypus has descended, yet it may take place whilst it remains entirely in utero.

It sometimes happens that the uterus becomes partially inverted,† before or after the polypus is expelled into the vagina; and this circumstance does not seem to depend altogether on the size of the polypus, or its weight. Polypus may also be accompanied with prolapsus uteri.‡

Polypi may be attached to any part of the womb, to its fundus, cervix, or mouth; and it has been observed, that there is less tendency to hemorrhage, when they are attached to the cervix, than either higher up, or to the os uteri itself. If there be a union betwixt the os uteri and the tumour,§ or if they be in intimate contact, polypus may pass for *inversio uteri*; but the history of the case, and attentive examination, will point out the difference, which will be noticed when I come to consider inversion and prolapsus of the uterus. Here I may only remark, that the womb is sensible, but the polypus is insensible to the touch, or to irritation; but it should be recollected, that if the polypus be moved, sensation can be produced by the effect on the womb.

Polypi are of different kinds. The most frequent kind is of a firm semicartilaginous structure, covered with a production of the inner membrane of the womb; and indeed it seems to proceed chiefly from a morbid change of that membrane, and a slow subsequent enlargement of the diseased portion; for the substance of the uterus itself is not necessarily affected. The enlargement is generally greatest at the farthest extremity of the tumour, and least near the womb;

* Mem. de l'Acad. de Chir. tom. III. p. 552.

† Vide case by Goulard, in Hist. de l'Acad. de Sciences, 1732, p. 42.—Dr. Denman, in his engravings, gives two plates of inversion, one from Dr. Hunter's Museum, the other from Mr. Hamilton.

‡ Med. Comment. vol. IV. p. 228.

§ Mem. of Med. Society in London, vol. V. p. 12.

so that there is a kind of pedicle formed, which sometimes contains pretty large blood vessels, and the tumour is pyriform. But if the membrane of the uterus be affected to a considerable extent, and especially if the substance of the uterus be diseased, then the base, or the attachment of the polypus, is broad.

The vessels are considerable, especially the veins, which sometimes burst. In every instance, I believe, if the patient live long, the tumour is disposed to ulcerate. The ulcer is either superficial and watery, or it is hollowed out, glossy, and has hard margins, or it is fungous. The two last varieties are most frequent.

Some polypi are soft and lymphatic, but these are rare in the uterus. Some are firm without, but contain gelatinous fluid, or substance like axunge within. Some are solid, others cellular, with considerable cavities.

Polypi are hurtful at first, by the irritation they give the uterus, and by sympathetic derangement of the abdominal viscera. In a more advanced stage, they are attended with debilitating and fatal hemorrhage, and often with febrile symptoms, especially if the discharge be offensive, or the surface ulcerated. Notwithstanding the existence of polypus, however, it is possible for a woman to conceive.*

Various means have been proposed for the removal of polypi, such as excision, caustic, or tearing them away; but all of these are dangerous and uncertain; and therefore the only method now practised, is to pass a ligature round the base or footstalk of the polypus, and tighten it so firmly as to kill the part. The ligature consists of a firm silk cord, or a well twisted hemp string, properly rubbed with wax, or covered with a varnish of elastic gum. This is better than a silver wire, which is apt to twist or form little spiral turns, which impede the operation, and may cut the tumour. It is difficult to pass the ligature properly, if the polypus be altogether in utero; and it ought not even to be attempted, if the os uteri be not fully dilated. On this account, if the symp-

* In M'Guiot's case, the polypus was expelled.—M. Levret adds other cases, *Mem. de l'Acad. de Chir.* tom. III. p. 543.

toms be not extremely urgent, it is proper to delay until the polypus have wholly, or in part, descended into the vagina; and when this has taken place, no good, but much evil may result from procrastination. It has even been proposed to accelerate the descent of the polypus, and produce an inversion of the uterus.*

A double canula has been long employed for the purpose of passing the ligature, one end of which was brought through each tube; and the middle portion, forming a loop, was carried over the tumour, either with the fingers, or the assistance of a silver probe with a small fork at the extremity. By practice and dexterity, this instrument will doubtless be adequate to the object in view; but without these requisites, the operator will be foiled, the ligature twisting or going past the tumour, and every attempt giving much uneasiness to the patient. This is especially the case, if the polypus be so large as to fill the vagina. The process may be facilitated by employing a double canula, but the tubes made to separate and unite at pleasure,† by means of a connecting base or third piece which can be adapted to them like a sheath. The ligature is to be passed through the tubes, which are to be placed close together, and no loop is to be left at the middle. They are then to be carried up along the tumour, generally betwixt it and the pubis. Being slid up along the finger to the neck of the polypus, one of them is to be firmly retained in its situation by an assistant, and the other carried completely round the tumour, and brought again to meet its fellow. The two tubes are then to be united by means of the common base. The ligature is thus made to encircle the polypus, and, if necessary, it may afterwards be raised higher up with the finger alone, or with the assistance of a forked probe.

* M. Baudelocque observes, "Nous regardions ce renversement nécessaire pour obtenir la guérison de la malade." *Recueil Period.* tome VI. p. 137.

† An instrument of this kind is proposed by M. Cullerier, and is described by M. Lefaucheux in his *Dissert. sur les Tumeurs Circonscrites et Indolentes du tissu cellulaire de la matrice et du vagin.*

When the ligature is placed in its proper situation, it is to be gradually and cautiously tightened, lest any part of the uterus which may be inverted be included. If so, the patient complains of pain, and sometimes vomits; and if these symptoms were neglected, and the ligature kept tight, pain and tension of the hypogastrium, fever-and convulsions, would take place, and in all probability the woman would die. (57) In some instances, however, the womb has been included without a fatal effect. (58)

Even when the uterus is not included, fever may succeed the operation, and be accompanied with slight pain in the belly; but the symptoms are mild, and no pain is felt when the ligature is first applied.

If the first tightening of the ligature, by way of trial, give no pain, it is to be drawn firmly, so as to compress the neck of the tumour sufficiently to stop the circulation. It is then to be secured at the extremity of the canula; and as the part will become less in some time, or may not have been very tightly acted on at first, the ligature is to be daily drawn tighter, and in a few days will make its way through. After the polypus is tied, it is felt to be more turgid, and harder; and if visible, it is found of a livid colour, and presently exhales a fetid smell. These are favourable signs.

(57) Dr. Denman, vol. I. p. 94, mentions a young lady, who had suffered long from uterine hemorrhage. A polypus was found just to have cleared the os uteri; a ligature was applied, but as she felt severe pain, and vomited, it was slackened. Every attempt to renew the ligature had the same effect. In six weeks she died, and it was found that the uterus was inverted.

(58) M. Herbiniaux, tom. II. obs. 17, relates a case. The ligature seemed to act on an inverted portion of the womb, producing pain, fever, and convulsions; it was slackened, but afterwards, notwithstanding a renewal of dreadful suffering, it was, with a perseverance hardly to be commended, employed so as at last to remove the polypus.—Desault found, after having applied a ligature round a polypus, and cut the tumour off next day, that part of the fundus uteri was attached to the amputated substance; the patient did well.—Baudelocque supposes that some cases, related as examples of amputation of inverted uteri, were merely polypi, accompanied with inversion. *Recueil Period.* tom. IV. p. 115.

SECTION TWENTY-NINTH.

There are other tumours still more dangerous, * as they end in incurable ulceration, and are so connected with the womb, that the whole of the diseased substance cannot be removed. These always adhere by a very broad base, (59) and cannot be moved freely, or turned round like the mild polypus. They are sometimes pretty firm, but generally they are soft and fungous, sometimes almost like a mass of clotted blood. When dissected, they are found to be very spongy, with cells or cavities of various sizes; sometimes they are laminated. These, which have been called vivaces by M. Levret, are always the consequence of a diseased state of the womb; but they are not always, as that author supposes, vegetations from an ulcerated surface. They do, however, very frequently spring from that source.

The hypogastric region is tumid, and painful to the touch, even more so than the tumour itself, which, felt per vaginam, is less sensible than the womb. Sometimes little pain is felt in this disease, except when the womb is pressed. The tumour often bleeds, discharges a sanious matter, and may shoot into the vagina; but in this it differs from polypus, that it comes into the vagina generally by growth, and not by expulsion from the womb, which does not decrease or become empty as the vagina fills. The treatment must be palliative, for extirpation does not succeed, the growth being rapidly renewed. Opiates and cleanliness are most useful.

* Vide Mem. de l'Acad. de Chir. tome III. p. 588.—Herbiniaux Observations, tome I. ob. 39.—Baillie's Morbid Anatomy, chap. xix.—Vigorous de Malad. des Femmes, tome I. p. 425.

(59) Dr Denman, vol. I. p. 95, relates a case of polypus with broad stem, which was supposed to be a cancer of the uterus. The ligature was applied, and in eight or nine days it came away; but when the polypus was removed, another substance, nearly of the same size, was found to have grown into the vagina. The woman died in a month. I have seen the common polypus combined with an indurated thickening of the uterus, and fungous or flocculent state of the cavity. In one case of this kind, the uterus and rectum freely communicated by ulceration.

SECTION THIRTIETH.

Moles* are fleshy or bloody substances contained within the cavity of the uterus. They acquire different degrees of magnitude, and are found of various density and structure. (60) They may form in women who have not borne children,† or they may succeed a natural delivery,‡ or follow an abortion, or take place in a diseased state of the uterus.¶ It is the opinion of many, that these substances are never formed in the virgin state, and no case that I have yet met with contradicts the supposition. The symptoms produced by moles are at first very much the same with those of pregnancy, such as nausea, fastidious appetite, enlargement of the breasts, &c.; but the belly enlarges much faster, is softer, and more variable in size than in pregnancy, being sometimes as large in the second month of the supposed, as it is in the fifth of the true pregnancy. Pressure occasionally gives pain. Petit observes, that the tumour seems to fall down when the woman stands erect, but this is not always the case. It must be confessed, that the symptoms are at first, in most cases ambiguous, nor can we for some time arrive at certainty. In general, the mass is expelled within three months, or before the usual time of quickening in pregnancy; and more or less hemorrhage accompanies the process, which is very similar to that of abortion, and requires the same management.§ Sometimes the expulsion may be advantageously hastened,

* Sandifort Obs. Path. Anat. lib. II. p. 78.—Schmid. de Concrément. Uteri, in Haller's Disp. Med. Tomus IV. p. 746.

† La Motte, chap. vii. This chapter contains several useful cases, one of which proved fatal from hemorrhage.

‡ Hoffman. Opera, tomus III. p. 182.—Stahl. Colleg. Casuale, cap. lxxvi. p. 797.

¶ With scirrhus of the uterus, Haller's Disp. Med. IV p. 751 et 753.

§ Puzos advises blood-letting. Traité, p. 211.—Vigarous recommends emetics and purgatives, to favour the expulsion, tome I. p. 115.

(60) Sometimes the mass appears to be putrid, and is expelled with great hemorrhage. Vide case by Dr. Blackbourn, Lond. Med. Journal, vol. 2. p. 122.—Sometimes it has a kind of osseous covering, as in the case by Hankoph, in Haller, Disp. Med. IV. p. 715

by extracting the tumour with the finger; but we must be careful not to lacerate it, and leave part behind. If the mole be retained beyond the usual time of quickening, we find that the belly does not increase in the same proportion as formerly, and the womb does not acquire the magnitude it possesses in a pregnancy of so many months' standing. There is also no motion perceived. Many of the symptoms of mole may proceed from polypus; but in that case the breasts are flaccid, and the symptoms indicating pregnancy are much more obscure. The os uteri is not necessarily closed in a case of polypus; whereas in that of a mole, if there have been no expulsive pains, it is generally shut.

SECTION -THIRTY-FIRST.

Hydatids may also enlarge the womb, and these frequently are formed in consequence of the destruction of the ovum at an early period, (61) or of the retention of some part of the

(61) In the Hist. of Acad. of Sciences for 1714, is the case of a woman who received a fall in the third month of pregnancy. The belly, however, increased in size till the fifth, when it began to lessen. In the sixth she was delivered of a bag, as large as the fist, with a placenta and fœtus of the size of a kidney bean. In this case, hydatids were not formed; but in the History for 1715, is a case, where the woman, falling in the second month, had the ovum converted into hydatids, which were expelled in the tenth month. As hydatids often succeed to genuine pregnancy, the symptoms may at first be exactly the same with those of pregnancy, nay, even motion may be felt, but afterwards the child may die, and hydatids form. Mr. Watson, in the Phil. Trans. vol. XLI. p. 711, gives a case, where there was, for a long time before the expulsion of hydatids, a quantity of blood discharged every night; pains at last came on, and expelled many hydatids. In this case, the symptoms of pregnancy were evident from Nov. to Feb. When the ovum is blighted, the belly ceases to enlarge in the due proportion, and the breasts become flaccid.

Dr Denman gives an engraving of a diseased ovum: and Mr. Home relates a case, where the patient, after being attacked with flooding, vomiting, and spasm in the abdomen, died. On opening her, the womb was found filled with hydatids, and its mouth a little dilated. Trans. of a Society, &c. vol. II. p. 300—Such cases as I have seen have been attended with a considerable discharge, but as great part of it was watery, it made a greater appearance than the real quantity of blood would have caused.

In a case related by Valleriola, p. 71, the woman had at first the usual symptoms of pregnancy, but in the eighth month expelled hydatids.—

placenta after delivery or abortion. We possess no certain diagnostic; but in general, hydatids are retained longer than moles, and sometimes even beyond the usual term of gestation. In this case, no motion is perceived, and no member of a child can be felt. The tumour of the abdomen, and the state of the uterus, do not correspond to the period of the supposed pregnancy. When they occur in gestation, we have the time when the ovum is blighted, marked by the breasts becoming flaccid, and the sickness and effects of pregnancy going off. After an uncertain lapse of time, pains come on, and the mass is discharged, often with very considerable hemorrhage. The process may often be advantageously assisted by introducing the hand to remove the hydatids, or to excite the contraction of the womb; but this must be done cautiously, and only when hemorrhage or some other urgent symptoms occur. These must be treated on general principles.

Pichart, in *Zod. Med. Gall. an. 3*, p. 73, relates a similar case, but the hydatids were expelled in the fourth month without hemorrhage.—Other cases of hydatids are to be found in *Tulpinus*, lib. III. c. 32. *Shenkus*, p. 685. *Mercatus de Mulier. Affect. lib. III. c. 8*. *Christ. a Veiga Art. Med. lib. III. § 10, c. 13*, relates an instance of 70 hydatids, as large as chesnuts, being expelled.—*Stalpart Vander Wiel*, tom. I. p. 301, mentions a woman, who, in the ninth month, after enduring pains for three days, expelled many hydatids, and the process was followed by lochia.—*Lossius*, *Obs. Med. lib. IV. ob. 16*, mentions a widow, who for several years had a tumid belly; after death, hydatids were found in utero. See also *Mauriceau's Observations*, obs. 367. *Ruysch*, *Obs. Anat. Chir. p. 25*. *Albinus Anat. Acad. lib. I. p. 69. and tab. III. fig. 1*, describes, in an abortion, the commencement of this change. The vesicles are not larger than the heads of pins.—*Wrisberg* describes a more advanced stage in *Nov. Comment. Gotting. tom. IV. p. 73*; and *Sandifort*, in his *Obs. Anat. Path. lib. II. c. 3, tab. VI. fig. 5*, has a case extremely distinct. See also *Haller, Opusc. Path. ob. 48*.

Vigarous, *Malad. &c. tom. I. p. 385*, proposes mercury to kill the hydatids. He knew an instance, where the woman discharged hydatids always when she went *à la garde-robe*.—*Mr. Mills* relates a case, where the woman, betwixt the second and third month, had symptoms of abortion, and afterwards, in the fifth or sixth, expelled above three pints of hydatids. *Vide Med. and Phys. Journal, vol. II. p. 447*.

When the mass is expelled, it is found either to consist entirely of small vesicles, or partly of vesicles, and partly of more solid remains of the ovum, or coagulum of blood.

SECTION THIRTY-SECOND.

Sometimes there is only one, or at most a very few large hydatids or vesicles filled with water in the womb, producing enlargement of the uterus, and tumefaction of the belly; but these effects do not go on so regularly, nor in the same ratio, as in pregnancy: no motion is felt, no child can be perceived, the breasts are flaccid, and the sympathetic signs of pregnancy are often, though not always, wanting, and an obscure fluctuation can sometimes be observed. When there is only one large hydatid or vesicle, a great quantity of water comes away at once,* and the swelling of the belly subsides. This discharge is seldom attended with pain. Occasionally there is a stillicidium of water,† or a temporary collection, owing to a morbid exhalation from the surface of the uterus. (62) Sometimes this is combined with a diseased state of the womb, and the water being prevented from escaping, very great accumulation may take place.‡ This disease may be combined with pregnancy, water being collected exterior to the membranes. (63) Collection of water in the uterus can-

* Hildanus, I think, relates the history of a woman who was supposed to be pregnant, but, *dum noctu cum marito rem haberet*, a sudden inundation swept away her hopes.

† Hoffman mentions a woman who had a constant stillicidium, a pint being discharged daily. It at last proved fatal. Opera, tom. III p. 160.

(62) Kirkringius, p. 28, considers dropsy of the uterus as impossible, and says, that every case of collection of water depends on a large hydatid. Dr Denman seems to be much of the same opinion. But we find instances where water is accumulated and repeatedly discharged, apparently from the removal of a temporary obstruction.—Fernelius relates a case, where the woman always before menstruation discharged much water. Path. lib. VI. c. 15.—And M. Geoffroy describes a case of repeated discharge. Vide Fourcroy la Med. Eclairé, tom. II. p. 287.—A case is related by Turner, where the external membrane of the uterus was said to be distended with water. The menses were suppressed, and a secretion of whitish fluid took place from the breast. Phil. Trans. No. 207.

‡ Vesalius, tom. I p. 438, says, that he found an uterus containing 180 pints of fluid, and its sides in many places scirrhus.

(63) Hildanus relates a case of this kind in his own wife, *dulcissima et charissima conjux mea*. Hydatids may also be combined with pregnancy. The same author tells us of a woman, who, in the fifth month, was deli-

not with certainty be cured. I do not know any thing more likely to do good, than evacuating the fluid by the os uteri, and introducing a bougie to prevent a new formation of vesicles, or injecting frequently into the uterus some astringent fluid.

SECTION THIRTY-THIRD.

Worms* have been found in the uterus, producing considerable irritation; and generally, in this case, there is a fœtid discharge. We can know this disease only by seeing the worms come away. It is cured by injecting strong bitter infusions.

SECTION THIRTY-FOURTH.

Sometimes† air is secreted by the uterine vessels, and comes away involuntarily, but not always quietly. Tonics, and astringent injections, occasionally do good; and as this disease rarely causes sterility, it is sometimes cured permanently by pregnancy. It is said, that the air is, in certain cases, retained, and the uterus distended with it, producing a tympanitis of the uterus.

SECTION THIRTY-FIFTH.

The prolapsus, or descent of the uterus, takes place in various degrees.‡ The slightest degree, or first stage, has been called a relaxation; a greater degree, a prolapsus; and the protrusion from the external parts, a procidentia. It is necessary to attend carefully to this disease, to ascertain its existence; as it may, if neglected, occasion bad health, and many un-

vered of a mola aquosa, or vesicles containing ten pounds of water; she did not miscarry, but went to the full time.

* Vigarous *Malad.* tome I. p. 412.—Mr. Cockson mentions a case, where maggots were discharged before the menstrual fluid. The woman was cured, by injecting oil, and infusion of camomile flowers. *Med. Comment.* Vol. III. p. 86.

† Vide Vigarous' *Maladies*, tome I. p. 401.

‡ Vide *Memoir* by Sabâtier, in the third vol. of the *Memoirs* of the Academy of Surgery.

easy sensations. The symptoms, at first, are ambiguous, and may proceed from other causes. The woman feels a weight and uneasiness about the pubis and hypogastric region, with an irritation about the urethra and bladder; and sometimes a tenderness in the course of the urethra. A dull dragging pain is felt at the groins, and this is increased by walking, but goes off after resting, or lying in bed. Pains are also felt in the thighs, and very frequently the back aches.

By examination, the uterus is felt to be lower down than usual, and the vagina either corrugated or inverted. In certain circumstances, the vagina prolapses, forming a circular protrusion at the vulva, similar to prolapsus ani. In the greatest degree or procidentia, the uterus is forced altogether out, inverting completely the vagina, and forming a large tumour betwixt the thighs. The intestines descend (64) lower into the pelvis, and even may form part of the tumour, being lodged in the inverted vagina, giving it an elastic feel. The uterus is partially retroverted, for the fundus projects immediately under the perinæum, and the os uteri is directed to the anterior part of the tumour. The orifice of the urethra is sometimes hid by the tumour, and the direction of the canal is changed; for the bladder, if it be not scirrhus, or distended with a calculus of large size, is carried down into the protruded parts; (65) and a catheter, passed

(64) Sometimes the situation of the abdominal viscera is very much altered. In Mr. Whyte's case, the liver was found to descend to the lower part of the belly, and the diaphragm was lengthened so as to allow the stomach to reach the umbilical region. Vide *Med. Obs. and Inq.* vol. III. p. 1.—In a complicated case, related by Schlincker, the pylorus hung down to the pubis. Haller, *Disp. Med.* IV. 419.

(65) This point is very well considered by Verdier, in his paper on *Hernia of the Urinary Bladder*, in the first vol. of *Mem. de l'Acad. de Chir.* See also a paper by M. Tenon, in *Mem. de l'Institute*, tom. VI. p. 614.—Mr. Paget relates a very interesting case of prolapsus uteri, in which the bladder became retroverted, lying above the uterus. It could not descend before it or along with it, being filled with a calculus, weighing 27 ounces, and others of small size. Some parts of the bladder were an inch thick; a catheter could not be introduced. *Med. and Phys. Journal*, vol. VI. p. 391.

into it, must be directed downwards and backwards. The procidentia is attended with the usual symptoms of prolapsus uteri, and also with a difficulty in voiding the urine, tenesmus, and pain in the tumour. If it be long or frequently down, the skin of the vagina becomes hard like the common integuments. Sometimes the tumour inflames, indurates; and then ulceration or sloughing takes place. This procidentia may occur in consequence of neglecting the first stage, and the uterus is propelled with bearing down pains: or it may take place all at once, in consequence of exertion, or of getting up too soon after delivery. It may also occur during pregnancy, and even during parturition. Sometimes it is complicated with stone in the bladder, (66) or with polypus in the uterus.*

Some have from theory denied the existence of prolapsus, (67) and others have disputed whether the ligaments were torn or relaxed. There can be little doubt, that when it occurs speedily after delivery, it is owing to the weight of the womb, and the relaxed state of the ligaments and vagina. From these causes, getting up too soon into an erect posture, or walking, may occasion prolapsus. When it occurs gradually in the unimpregnated state, it is rather owing to a relaxation of the vagina and parts in the pelvis, than elongation of the round ligaments. By experiments made on the dead subject, we find that more resistance is afforded to the protrusion, by the connexion of the uterus and vagina to the neighbouring parts, than by the agency of the ligaments; for although

(66) Ruysch, feeling some hard bodies in the tumour, formed by the protruded parts, cut out 42 calculi from the bladder. M. Tolet extracted fifty, and afterwards cured the woman with a pessary. Duverney met with a large calculus in the bladder, with procidentia uteri; and Mr. Whyte relates a similar fact. Med. Obs. and Inq. vol. III. p. 1. See also Deschamps *Traité de la Taille*, tom. IV. p. 158.

* Vide the case of a girl aged twenty-one years, related by Mr. Fynney. The polypous excrescence was extirpated from the os uteri, and then a pessary was employed. Med. Comment. vol. IV. p. 228.

(67) Kerkringius says, *nemo vidit nemo sensit decepti omnes imagine falsa, alios decipiunt; laxitas quedam colli quæ extra pudendum prominet, hæc nobis fecit ludibrio*. Opera, p. 48. Vide also Job a Meckren, *Observ. Chir. c. 51*. Barbatte *Chirurg. c. 8*. Roonhuysen, *Obs. Chir. part I. ob. 2*.

the ligaments be cut, we cannot without much force make the uterus protrude. Frequent parturition, fluor albus, and whatever tends to weaken or relax the parts, may occasion prolapsus. Sometimes a fall brings it on. No age is exempt from it. (68) When symptoms indicating prolapsus uteri manifest themselves, we ought to examine the state of the womb, the patient being in an erect posture. The symptoms sometimes at first turn the attention rather to the bladder or pubis, than the womb; but a practitioner of experience will think it incumbent on him to ascertain the real situation of this viscus. If it be found considerably lower down than it ought to be, then we must have recourse to mechanical means for keeping it up. A piece of sponge, introduced into the vagina, will have this effect, or we may use a pessary. Pessaries are of different shapes, some oval, some flat and circular, some like spindles, or the figure of eight, others globular. I believe, of all these, the globular pessary is the best, and it ought to be of such size as to require a little force to introduce it into the vagina; that is to say, it must be so large as not to fall through the orifice, when the woman moves or walks. A bag of elastic gum, stuffed with hair, often makes a convenient pessary. Whatever be employed, it ought to be taken frequently out and cleaned; (69) and at the same time, as-tringent injections may be thrown into the vagina.

(68) Dr. Monro mentions a procidentia uteri, in a very young girl. It was preceded by bloody discharge. Works, p. 535. Another case is related by Saviard, obs. 15, in which the prolapsed uterus was mistaken for the male penis; and as Goldsmith's soldier believed they would allow him to be born in no parish, so this girl was in danger of being determined to have no sex.

(69) Morand relates the case of a woman who had foetid discharge from the vagina, accompanied with pain. On examination, fungous excrescences were discovered in the vagina, and amongst these a hard substance, which being extracted, was found to be part of a silver pessary. The vagina contracted at this spot, and thus, though in a disagreeable way, prevented a return of the prolapsus. Pessaries have also ulcerated through to the rectum; and Mr. Blair mentions a woman in the Lock Hospital, who had introduced a quadrangular piece of wood into the vagina as a pessary, and which ulcerated thus into the rectum, producing great irritation. Med. and Phys. Journal, vol. X. p. 491. It is likewise

If the procidentia be large, and have been of long duration, the reduction of the uterus may disorder the contents of the abdomen, producing both pain and sickness. In this case, we must enjoin strict rest in a horizontal posture. The belly should be fomented, and an anodyne administered. Sometimes it is necessary to take away a little blood; and we must always attend to the state of the bladder, preventing an accumulation of urine. When the symptoms are abated, a pessary must be introduced,* and the woman may rise.

If the tumour, from having been much irritated, or long protruded, be large, hard, inflamed, and perhaps ulcerated, it will be impossible to reduce it until the swelling and inflammation are abated, by a recumbent posture, fomentations, saturnine applications, laxatives, and perhaps even blood-letting.† After some days we may attempt the reduction, and will find it useful previously to empty the bladder. The reduction, in general, causes for a time, abdominal uneasiness. If the uterus cannot be reduced, and is much diseased, it has been proposed to extirpate the tumour. This has been done, it is true, with success, (70) but it is extremely dangerous; for

necessary, if the pessary have an opening in it, to observe that the cervix uteri do not get into the opening, and become strangulated.

* Dr. Denman very properly advises, that a pessary should not be introduced immediately after the uterus is reduced. *Lond. Med. Journal*, vol. VII. p. 56.

† M. Hoin succeeded in reducing a very large, hard, and even ulcerated procidentia, by fomentations, rest, and low diet. *Mem. de l'Acad. de Chir.* tome III. p. 365.

(70) See Rousset, Plater, and Platner, *Inst. Chir.* section 1447. Wedelius de Procid. Uteri, c. 4. Volkamer, in *Miscel. Cur. an.* 2. ob. 226. Another case may be seen in *Journal de Med.* tom. LXVIII. p. 195. Paré *Oeuvres*, p. 970. Carpus extirpated it with success. Vide Longii *Epist. Med. lib. II. epist.* 39.—Slevogtius relates a distinct case, where the womb was found in the vagina as if in a purse. *Dissert.* § 12.—Benevenius says, he saw a woman whose uterus sloughed off. *De Mirand. Morb. Causis*, cap. 12.—Dr. Elmer supposes he has met with a similar case. *Med. and Phys. Journal*, vol. XVIII. p. 344.—The latest case is related by Laumonier. The patient was long subject to prolapsus uteri, but at last the womb, with the vagina, was forced out so violently, that she thought all her bowels had come out. At the upper part of the tumour there was a strong pulsation. It was extirpated chiefly by ligature. The

the bladder is apt to be tied* by the ligature, which is put round the part; and as the intestines fall down above the uterus into the sac, formed by the inverted vagina, they also are apt to be cut† or constricted.

A prolapsus uteri does not prevent the woman from becoming pregnant; (71) and it is even of advantage, that she should become gravid, as we thus, at least for a time, generally cure the prolapsus. But we must take care, lest premature labour‡ be excited; for the uterus may not rise properly, or may again prolapse, if exertion be used.

Sometimes, especially if the person receive a fall, (72) or have a wide pelvis, the uterus may prolapse during pregnancy, although the woman have not formerly had this disease. Our first care ought to be directed to the bladder, (73) lest fatal suppression of urine (74) take place. Our next ob-

woman died some years after this, and the womb was found wanting. La Med. Eclairé, par Fourcroy, tom. IV. p. 33. M. Baudelocque, however, says, that the uterus was only partially extirpated. Vide Recueil Period. tom V p. 332.

* This happened in Ruysch's case. Obs. Anat. vii.

† This occurred in a case related by Henry, ab Heers, Obs. Med. p. 192.

(71) Harvey relates a case, where the tumour was as large as a man's head, ulcerated, and discharged sanies. It was proposed to extirpate the prolapsed uterus, but the following night a fœtus was expelled, *spithama longitudine*. Opera, p. 558. See also a case by Mr. Antrobus, in Med. Museum, vol. I. p. 227.

‡ Vide Mr. Hill's case, in Med. Comment. vol. IV. p. 88.

(72) Dr. Burton had a patient, who in the fourth month of pregnancy fell, and was thereafter seized with suppression of urine. The os uteri was found almost at the orifice of the vagina. He drew off about three quarts of urine, raised up the womb, and introduced a pessary. System, p. 156.

(73) Mr. Dray mentions a case, where, in the fourth month of pregnancy, the woman was seized with pains, like those indicating abortion, accompanied with suppression of urine. The os uteri was very near the orifice of the vagina. This disease proving fatal, the bladder was found to be thickened, enlarged, and in part mortified. Vide Med. and Phys. Journal, vol. III. p. 456.

(74) Reink mentions a woman who was pregnant of twins. In the fourth month, the womb prolapsed, and caused a fatal suppression of urine. The vagina, at the upper part, was corrugated and inverted. Haller, Disp. Chir. tom. III. p. 585.

ject is to replace the uterus, and retain it by rest, and a pessary. If it cannot be reduced,* the uterus must be supported by a bandage,† until by delivery, it be emptied of its contents. It is then to be reduced. The management of prolapsus during labour, will be afterwards considered.

If prolapsus be threatened, or have taken place after delivery, in consequence, for instance, of getting up too soon, we must replace the womb, and confine the woman to a horizontal posture, till it have regained its proper size and weight; and this diminution may be assisted, if dilatory, by gentle laxatives.

SECTION THIRTY-SIXTH.

Inguinal herniæ of the uterus have been long ago described by Sennert, Hildanus, and Ruysch, and very lately by Lallement. This species of displacement may occur in the unimpregnated state, and the woman afterwards conceive; or it may take place when pregnancy is somewhat advanced. If it be possible to reduce the uterus, this must be done; and in one stage, an artificial enlargement of the foramen, through which the uterus has protruded, may assist the reduction. If, however, gestation be far advanced, then an incision must be made into the uterus whenever pains come on, and the child must be thus extracted.

SECTION THIRTY-SEVENTH.

The ovarium is subject to several diseases, of which the most frequent is that called dropsy. The appellation, however, is perhaps not strictly proper, for it is connected with a peculiar change of the gland,‡ and the fluid contained in the

* See a remarkable case of prolapsus in the gravid state, where the whole uterus protruded, and reduction was not accomplished till after delivery. By P. C. Fabricius, in Haller, *Disp. Chir. tomus III. p. 434.*

† Vide *Memoirs* by M. Sabatier, in *Mem. de l'Acad. de Chir. tome III. p. 370.*

‡ Le Dran says, this dropsy always begins with a scirrhus, and is only a symptom of it.—Dr. Hunter says he never found any part of a dropsical ovarium in a truly scirrhus state.

cysts is very frequently thick and viscid. In this disease, the gland is converted into a number of cysts, having cellular, fleshy,* or indurated substance, interposed betwixt them. These cysts vary in number and in magnitude. Sometimes there is only one large cyst containing serous fluid; but most frequently we have a great many cysts in a state of progressive enlargement; the small ones not being larger than peas, the great cyst sometimes as large as the gravid uterus of a cow. The inner surface of the cysts may either be smooth, or covered with eminences like the papillæ of a cow's uterus.† The thickness of the cysts is likewise various, for sometimes they are thin as bladders, sometimes fleshy, and an inch thick. The fluid they contain is generally thick and coloured, and frequently fœtid. In some instances, the fluid contains flakes of fleshy matter, or tufts of hair; and occasionally it is altogether gelatinous, and cannot be brought through a small opening. The tumour has been seen made up entirely, or in part, of hydatids. (75) This morbid affection of the ovarium sometimes begins with pretty acute pain about the groins, thighs, and side of the lower belly, with disturbance of the stomach and intestines, and occasionally syncope. In some patients pain is felt very early in the mammæ; and M. Robert affirms, that it is most frequent in the same side with the affected ovarium. In some cases milk is secreted. (76) But

* Dr. Johnson's patient had the right ovarium converted into a fleshy mass, weighing nine pounds, and full of eysts. *Med. Comment.* vol. VII p. 265.

† I have seen the inner surface of the ovarium studded over with nearly two dozen of large tumours. M. Morand notices two cases, in which a similar structure obtained

(75) Sampson, in the *Phil. Trans.* No. 140, describes an ovarium filled with hydatids, containing 112 pounds of fluid.—Willi mentions a tailor's wife, whose ovarium weighed above 100 pounds, and contained partly hydatids, partly gelatinous fluid. *Haller, Disp. Med.* tom. IV. p. 447.

(76) In a case detailed by Vater, the patient had symptoms of pregnancy, secreted milk, and even thought she felt motion. The belly continued swelled, and she had bad health for three years and a half, when she died. The abdomen contained much water, and the right ovarium was found to be as large as a man's head, containing capsules, filled with purulent-looking matter. The uterus was healthy, but prolapsed, and the

generally the symptoms are, at first, dependent on the pressure of the parts within the pelvis. The patient is costive, and subject to piles; has a difficulty in making water, or even a complete retention of urine; and sometimes one of the feet swells. By examining per vaginam, a tumour may often be felt betwixt the vagina and rectum, and the os uteri is thrown forward near the pubis; so that, without some attention, the disease may be taken for retroversion of the womb.* In some time after this, the tumour, in general, rises out of the pelvis, (77) and these symptoms go off. A movable mass can be felt in the hypogastric, or one of the iliac regions, which gradually enlarges, and can be ascertained to have an obscure fluctuation. The tumour is movable, until it acquire so great size, as to fill and render tense the abdominal cavity. It then resembles ascites, with which it in general comes to be ultimately combined. (78) As it rises, it sometimes presses on the fundus vesicæ, producing incontinence of urine, or on the kidney, causing part of it to be absorbed; and it generally irritates the bowels, causing uneasy sensations, and sometimes hysterical affections.† It augments in size, and carries up the

ureter was distended from pressure. Haller, *Disp. Med.* tom. IV. p. 401. This was not a case of extra-uterine gestation, for the ovarium was divided into cells, and had no appearance of fœtus.

* Mr. Home's case related by Dr. Denman, vol. I. p. 130, had very much the appearance of retroversion.

(77) In some cases it does not ascend out of the pelvis, or if it do, the inferior part of the tumour sinks again into it. Morgagni relates an instance where the ovarium weighed 24 pounds; and the lower part of it filled the pelvis so well, that when it was drawn out, it made a noise like a cupping glass when pulled away from the skin. *Epist.* 39, art. 39.

(78) It may be combined with effusion of water in the abdominal cavity. Dr. Bosch's patient had 16 pints of water in the abdomen, and both ovaria were enlarged so as to weigh 102 pounds. This patient complained of great pain and weight in the lower belly, and over the right hip. She was much emaciated, but the menses were regular. When she was tapped, not above two tea-cupfuls of fluid were discharged. *Med. and Phys. Journal*, vol. VIII. p. 444.—Mr. French met with a case of ascitis and dropsy of the ovarium. The ovarium extended from the pubis to the diaphragm. This patient had voracious appetite. *Mem. of Medical Society*, vol. I. p. 234.

† Case by Sir Hans Sloan, in *Phil. Trans.* No. 252.—Dr. Pulteney's

uterus with it;* so that the vagina is elongated: and this is especially the case, if both ovaria be enlarged. (79) The urine is not in the commencement much diminished in quantity, unless this disease be conjoined with ascites; and the thirst, at first, is not greatly increased. But when the tumour has acquired a great size, the urine is generally much diminished or obstructed. If, however, the tumour be lessened artificially, it is often, for a time, increased in quantity, and the health improved. This is well illustrated by the case of Madame de Rosney,† who, in the space of four years, was tapped twenty-eight times: for several days after each puncture, she made water freely, and in sufficient quantity; the appetite was good, and all the functions well performed: but in proportion as the tumour increased, the urine in spite of diuretics, diminished, and at last came only in drops.

In the course of the disease, the patient has often attacks of pain in the belly, with fever, indicating inflammation of

patient, whose ovarium weighed fifty-six pounds, had excruciating pain in the left side, spasms and hysterical fits. *Mem. of Medical Society*, vol. II. p. 265.

* This point is well considered by M. Voisin, in the *Recueil Period.* tome XVII. p. 371, et seq.—The bladder may also be displaced, as in the case of Mademoiselle Argant, related by Portal. *Cours d'Anat.* tome V. p. 549.

(79) If only one of the ovaria be enlarged, or if both be affected, but only one much increased, the uterus is often not raised, because the ovarium turns on its axis, and the uterus lies below it. In a case with which I was favoured by Dr. Cleghorn, both ovaria were greatly tumefied, and could be felt on each side of the navel, whilst immediately beneath that, they seemed to be united by a flat hard substance, and when the urine was long retained, a fluctuation could be perceived before that part. Upon dissection, a firm thick substance was found, extending from the pubis to the navel, betwixt the ovaria. This was the uterus and vagina. The uterus itself was lengthened, the cervix was three inches long, and all appearance of os tinæ was destroyed. Her complaints began after being suddenly terrified: first she felt severe pain in the right groin, with weakness of the thigh, and soon afterwards perceived a tumour in the belly, and presently another appeared in the left side. She was tapped 16 times.

† Portal *Cours d'Anat.* tome V. p. 549.

part of the tumour; but in some cases, these symptoms are absent, and little distress is felt, until the tumour acquire a size so great as to obstruct respiration, and cause a great sense of distension. Then, the abdominal coverings are so tender, that they cannot bear pressure; and the emaciated patient worn out with restless nights, feverishness, want of appetite, pain, and dyspnœa, expires. In this disease the woman generally continues regular for a considerable time, and even may become pregnant.

This disease has sometimes appeared to be occasioned by injury done to the uterus in parturition, as, for instance, by hasty extraction of the placenta; or by blows, falls, violent passions, frights, or the application of cold; but very often no evident exciting cause can be assigned.

In the first stage of this disease, we must attend to the effects produced by pressure. The bladder is to be emptied by the catheter, when this is necessary; and stools are to be procured. It may be considered, how far, at this period, it is proper to tap the tumour from the vagina, and, by injections or other means, endeavour to promote a radical cure. When the woman is pregnant, and the tumour opposes delivery, there can be no doubt of the propriety of making a puncture, (80) which is preferable to the use of the crotchet. But this has only been resorted to, in order to obviate particular inconveniences, and affords no rule of conduct in other cases. I am inclined to dissuade from any operation at this period, when it can be avoided, because in a short time the tumour rises out of the pelvis; and then the patient may remain tolerably easy for many months or years. Besides, the ovarium in this disease contains, in general, many cysts; and as these, in the first stage, are small, we can only hope to empty the largest. Perhaps we may not open even that; and although it could be opened and healed, still there

(80) In a case noticed by Dr. Denman, the labour was obstructed until the ovarium was emptied, by piercing it from the vagina. The woman died six months afterwards. *Introd.* vol. II. p. 74.—In Dr. Ford's case, related by Dr. Denman, the crotchet was employed. See also a case by M. Baudelocque, *l'Art. des Accouch.* § 1964.

are others coming forward, which will soon require the same treatment. Puncturing, then, can only retard the growth of the tumour, and keep it longer in the pelvis, where its presence is dangerous.

When the tumour has risen out of the pelvis, we must, in our treatment, be much regulated by the symptoms. The bowels should be kept open, but not loose. If, at any time, much pain be felt, we may apply leeches, and use fomentations, or put a blister over the part: and if there be continued irritation, or hysterical affections, we must give opiates, and prevent costiveness. Upon the supposition of this disease being a dropsy, diuretics have been prescribed, but not with much success (81), and often with detriment. Some have supposed, that diuretics do no good whilst the disease is on the increase; but that when it arrives at its acmé, they are of service. But this disease is never at a stand; it goes on increasing, till the patient is destroyed. When they produce any effect, it is chiefly that of removing dropsical affections combined with this disease; and, in this respect, they are most powerful immediately after paracentesis. In one case, fomentations and poultices appear to have dissolved a tumified ovarium.*

Having palliated symptoms until the distension becomes troublesome, we must then tap the tumour, which gives very great relief, and, by being repeated according to circumstances may contribute to prolong life for a length of time. (82)

(81) Dr. Denman justly observes, that diuretics have no effect, vol. I. p. 122. And Dr. Hunter remarks, that “the dropsy of the ovarium, is an incurable disease, and that the patient will have the best chance for living longest under it, who does the least to get rid of it. The trocar is almost the only palliative.” *Med. Obs. and Inq.* vol. II. p. 41.—Willi, however, relates a case of 14 years’ standing, which was cured by diuretics, and it was calculated that the tumour contained 100 pounds of fluid. Haller, *Disp. Med.* tom. IV. p. 451.

* Vide Dr. Monro’s fourth case, in *Med. Essays*, vol. V.

(82) Dr. Denman advises the operation to be deferred as long as possible, and I believe he is right, for every operation is followed by re-accumulation, which is a debilitating process; yet it is astonishing how much may in the course of time be secreted, without destroying the patient. Mr. Ford tapped his patient 49 times, and drew off 2786 pints.

As the uterus may be carried up by the tumour, it is proper to ascertain, whether it be the right ovarium, or the left, which is enlarged; and we should always tap the right ovarium on the right side, and *vice versa*: by a contrary practice the uterus has been wounded.* When the disease is combined with ascites, it is sometimes necessary to introduce the trocar twice, and the difference between the two fluids drawn off is often very great.

Finally, it has been proposed, to procure a radical cure, by laying open the tumour, evacuating the matter, and preventing the wound from healing, by which a fistulous sore is produced; or by introducing a tent, or throwing in a stimulating injection. Some of these methods have, it is true, been successful, (83) but occasionally they have been fatal; (84)

The secretion was at last so rapid, that three pints and three ounces were accumulated daily. *Med. Commun.* vol. II. p. 123.—Mr. Martineau tapped his patient 80 times, and drew off 6631 pints, or 13 hogsheads; at one time, he drew off no less than 108 pints. *Phil. Trans.* vol. LXXIV. p. 471.

* In a case of this kind related by M. Voisin, the uterus was wounded, and the patient felt great pain and fainted. She died on the third day after the operation. *Recueil Period.* tome VII. p. 372, &c.

(83) Le Dran relates two cases in the *Mem. de l'Acad. de Chir.* tom. III. In the first, the cyst was opened, and the woman cured of the dropsy, but a fistulous opening remained, p. 431. In the second, he made a pretty large incision, and introduced a canula into the sac. The operation was followed by fever, delirium, and vomiting; the woman retained nothing but a little Spanish wine for three weeks. She discharged daily 8 or 10 ounces of red fluid. At length, all of a sudden, 15 ounces of white pus were evacuated, and then the symptoms abated; but a fistula remained for two years, when it healed, p. 442.

Dr. Houston relates the case of a woman in this neighbourhood, in whom he made an incision two inches long into the ovarium, and then with a fir splint turned out a great quantity of gelatinous matter and hydatids. He kept the womb open with a tent, and succeeded in curing the patient. The disease was attributed to rash extraction of the placenta, and had existed for 13 years. It was attended with violent pains. *Phil. Trans.* XXXIII. p. 5.

M. Voisin relates a case, which was palliated by tapping, and keeping a fistula open. *Recueil Periodique*, tom. XVII. p. 381. And Portal gives an instance, where, by keeping the canula in the wound for a short time, a radical cure was obtained, and the person afterwards had children. *Cours d'Anat.* tom. V. p. 554.

(84) De la Porte tapped a woman who had a large tumour in the

and in no case, which I have seen, have they been attended with benefit. There are two powerful objections to all these practices, besides the risk of exciting fatal inflammation: the first is, that the cyst is often irregular on its interior surface, and therefore cannot be expected to adhere: the second is, that as the ovary, when dropsical, seldom consists of one single cavity, so, although one cyst be destroyed, others will enlarge and renew the swelling; and indeed, the swelling is seldom or never completely removed, nor the tumour emptied, by one operation. Hence even as a palliative, the trocar must sometimes be introduced into two or more places. It has happened, that a cyst has adhered to the intestine, (85) and burst into it, the patient discharging glary or fætid matter by stool. (86) Such instances as I have known, have only been palliated, but not cured, by this circumstance. Sometimes the fluid has been evacuated per vaginam, (87)

belly, but nothing came through the canula. He made an incision of considerable length, and, in the course of two hours and an half, extracted 35 lb. of jelly. The lips of the wounds were then brought together. Next day 15 lb. of jelly were evacuated, but presently vomiting and fever took place; and she died on the thirtieth day, having discharged altogether 67 lb. of fluid. This disease was of sixteen months' standing, and was attributed to hemorrhage. *Mem. de l'Acad. de Chir. tom. III. p. 452.*

Dr Denman notices the case of a patient, who died the sixth day after injecting the ovary. *Vol. I. p. 122.*

(85) Dr. Monro, in *Med. Essays*, vol. V. p. 773, details the history of a patient who had a diseased ovary, and in whom the tumour pointed about four inches below the navel. It was opened, but nothing but air came out, followed next day by fæces: on the fifth day some pus was discharged. She gradually improved in health, and the tumour of the belly subsided; but in two years afterwards, the suppuration was renewed, and she died. In this case, the colon had probably adhered to the ovary.

(86) Dr. Denman relates the case of a patient, who, having for some time suffered from pain and tenderness about the sacrum and uterus, and uterine hemorrhage, was suddenly seized with vomiting, syncope, pains in the belly, and costiveness; presently a tumour was felt in the right side, and this soon occupied the whole abdomen. This patient was cured, after purging a gelatinous fluid. *Med. and Phys. Jour. vol. II. p. 20.*

(87) Dr. Monro relates a case of supposed pregnancy, in the tenth month of which, the tumour was removed by an aqueous discharge from the vagina. In a future attack, however, violent bearing down pains were excited, and the woman died exhausted. The left ovary was found greatly enlarged with vesicles. *Med. Essays*, vol. V. p. 770.

or the ovarium has opened into the general cavity of the abdomen, and the fluid been effused there.

There is another disease, or a variety of the former disease, in which bones, hair, and teeth, are found in the ovarium. (88) The sac, in which these are contained, is sometimes large, and generally is filled with watery or gelatinous fluid. The bony substance, and teeth, usually adhere to the inner surface of the cyst. This disease produces no inconvenience, except from pressure. It has been deemed by some, to be merely an ovarian conception; but it may undoubtedly take place without impregnation, nay, similar tumours have been found in the male sex. (89) It is to be treated as the former disease.

SECTION THIRTY-EIGHTH.

The ovaria are sometimes affected with scrofula, and the tumour may prove fatal by producing retention of urine.

(88) See Dr. Baillie's *Morbid Anatomy*, chap. 20.—Dr. J. Cleghorn mentions a woman who died ten days after being tapped. The right ovarium was found greatly enlarged, and had many cells, some containing hair, cretaceous matter, fragments of bone and teeth, other gelatinous fluid. *Trans. of Royal Irish Acad.* vol. I. p. 80.—In *Essays Phys. and Literary*, vol. II. p. 300, a case is mentioned, in which the one ovarium contained many vesicles; the other contained a mass, like brain with bones and teeth.—In the museum attached to the hospital at Vienna, there is a large ovarium, the inner surface of which is covered with hair.—Horstius met with an ovarium, containing hair, purulent looking and oily matter. *Opera*, p. 249.—Schenkins met with fat and hair, p. 556; and Schacher relates a similar case in *Haller's Disp. Med.* tom. IV. p. 477.—Ruysch, in his *Adversaria*, says, he met with bones and hair; and Le Rich, in the *Hist. de l'Acad. de Sciences*, 1743, met with hair and oil, in cells, together with bones and teeth. See also *Recueil Period.* tom. XVII. p. 462.

(89) Duverney saw a tumour extirpated from the scrotum, containing fleshy matter and bones. *Oeuvres*, tom II. p. 562. And M. Dupuytren presented a report to the Medical School at Paris, relating to the history of a tumour found in the abdomen of a boy, containing a mass of hair, and a fœtus nearly ossified. It was supposed, that at conception, one germ had got within another. See *Edin. Med. Jour.* vol. I. p. 376. From the respectable evidence of Baudelocque, Le Roy, &c. this cannot be placed on a footing with Halley's case of a greyhound dog, who voided by the anus a living whelp! *Phil. Trans.* vol. XIX. p. 316.—I believe that bones, hair, &c. have been found in a gelding.

When it rises out of the pelvis, it is often productive of hypochondriasis, and very much resembles the ovarian disease, formerly mentioned, but is firmer, seldom gives a sensation of fluctuation, and sometimes is very painful when pressed. It rarely terminates in suppuration; but when it does, the fluid, as Portal observes, is *blanchâtre, filamenteux, grumelleux, mal digéré*. The substance of the ovarium is soft, and similar to that of other scrofulous glands. Occasionally it contains a cheesy substance, which is found, at the same time, in the mesenteric and other glands. Burnt sponge, cicuta, mercury, electricity, laxatives, &c. have been employed, but seldom with benefit. The most we can do, is to palliate symptoms, such as retention of urine, costiveness, dyspepsia, or pain.

The ovarium may also be enlarged, and become hard and stony, (90) or converted into a fatty substance. (91) Sometimes it is affected with the spongoid disease, and is changed into a substance like brain, with cysts containing bloody serum. Frequently we find, on cutting an enlarged ovarium, that part of it resembles the spongoid structure, having bloody fungous cysts; part is like firm jelly, and part like cartilage, or dense fat. Often the uterus participates in the disease.

(90) Schlencker mentions a woman, who, soon after delivery, felt obtuse pains in the left side, and presently a swelling appeared in the belly. She had bad appetite, swelled feet, prolapsed uterus, and suppression of urine and feces. The left ovarium was hard and stony, and weighed 8 ounces. Haller, Disp. Med. tom. IV. p. 419. In this case the tumefaction of the belly could not be caused by the presence of the ovarium, but rather from the pressure on the intestines.

(91) Vide case by Fontaine, in Haller, Disp. Med. tom. IV. p. 485. The patient had tumour of the abdomen, with lancing pains in the left side, extending to the thigh. The left ovarium weighed 10 pounds, the right was as large as the fist, and both consisted of fatty matter. Portal likewise relates a case of this disease, where the right ovarium was as large as a man's head, very hard, and filled with steatomatous matter, weighing altogether 55 pounds. The uterus and bladder were turned to the left side. No water was effused, but the person was cut off by hectic and diarrhœa. Some steatomatous concretions were found in the lungs. Cours d'Anatomie, tom. V. p. 549.

I have seen a mass of this kind weigh thirteen pounds. I have never seen the ovarium cancerous.

SECTION THIRTY-NINTH.

The ovarium may be wanting on one or both sides, or may be unusually small. In such cases, it sometimes happens, that the growth of the external parts stops early, and the marks of puberty are not exhibited. The ovarium may form part of a herniary tumour.

SECTION FORTIETH.

The tubes may be wanting, or impervious, and are subject to many of the diseases of the ovaria.

The round ligaments may partake of the disease of the uterus, or may have similar diseases, originally appearing in them. When they are affected, pain is felt at the ring of the oblique muscles, and sometime a swelling can be perceived there.

CHAPTER XI.

Of Menstruation.

THE periodical discharge of sanguineous fluid, which takes place every month from the uterus, is termed the menses; and whilst the discharge continues, the woman is said to be out of order, or unwell.

In some instances, the discharge takes place at puberty, without any previous or attendant indisposition; but in most cases, it is preceded by uneasy feelings, very often by affections of the stomach and bowels, pain about the back and pelvis, and various hysterical symptoms. These affections, which are more or less urgent in different individuals, gradually abate; but at the end of a month, return with more severity, attended with colic pains, quick pulse, sometimes hot skin, and a desire to vomit. There now takes place from the vagina, a discharge of a serous fluid, slightly red, but if

does not in general become perfectly sanguineous for several periods. When the discharge flows, the symptoms abate; but frequently a considerable degree of weakness remains, and a dark circle surrounds the eye. In a short time the girl menstruates, often without any other inconvenience than a slight pain in the back, though sometimes, during the whole of her life, she suffers from many of the former symptoms, every time she is unwell; and all women, at the menstrual period, are more subject than at other times to spasmodic and hysterical complaints.

When a girl begins to menstruate, certain changes take place, denoting the age of puberty. The uterus becomes more expanded, and receives its adult form; the vagina enlarges; the mons veneris swells up, and is covered with hair; the pelvis is enlarged; the glandular substance of the breasts is unfolded, and the cellular part increased; at the same time the mental powers become stronger, and new passions begin to operate on the female heart.

The age at which menstruation begins, varies in individuals, and also in different climates. It is a general law, that the warmer the climate, the earlier does the discharge take place, and the sooner does it cease. In Asia, for instance, the menses begin about nine years of age; whilst in the north, a woman does not arrive at puberty until she is eighteen or twenty years old: nay, if we may credit authors, in very cold countries, women only menstruate in the summer season. (a) In the temperate parts of Europe, the most common age at which the menses appear, is thirteen or fourteen years. (b)

The quantity of the discharge varies, also, according to the climate and constitution of the woman. In this country, from six to eight ounces are lost at each menstrual period; but this does not flow suddenly, it comes away slowly for the space of three or four days. Some women discharge less

(a) Linnaeus and others have said that the women of Lapland do not menstruate more than once or twice in the year. ED.

(b) Menstruation commences about the same age in the United States, and continues to the fortieth or forty-fifth year. ED.

than this, and are unwell for a shorter space of time: others, especially those who live luxuriously, and are confined in warm apartments, menstruate more copiously, and continue to do so for a week.

In this country, menstruation ceases about the forty-fourth year, lasting for a period of about thirty years. In the East, the menses begin soon, flow copiously, and end early; the women in Asia, for example, being old, whilst the Europeans are still in their prime. In the North, the menses begin late, flow sparingly, and continue long.

The menses are obstructed during pregnancy, (c) and the giving of suck; but if lactation be very long continued, the menses return, and the milk disappears or becomes bad.

The discharge appears to be yielded by the uterine arteries, but it is not an extravasation or hemorrhage, for, when collected, it does not separate into the same parts with blood,

(c) This is a point still debated. The weight of authority is, however, decidedly against menstruation continuing during pregnancy. By Denman, and almost all the modern writers, it is denied. Those who maintain the contrary opinion have very probably mistaken a hemorrhage from the vagina, which sometimes recurs with considerable periodical regularity, for the menstrual flux. Several cases of this kind have come under my own observation, where I had an opportunity of examining the discharge accurately. In every instance, I found it pure *coagulable blood*.

By adverting to the state of the pregnant uterus, this is exactly what we should be led to expect. Contemporary with conception, we know that the uterine cavity is lined with the *membrana decidua*, and that soon afterwards the *os tincæ* is completely sealed with impacted mucus. Were an effusion therefore to take place, especially in the early months of gestation, it would destroy the attachment of the membrane, and produce all the consequences of uterine hemorrhage.

It would seem, moreover, that the action which the vessels of the uterus take on to fabricate and support this membrane, is totally incompatible with the menstrual secretion. The two actions cannot coexist. This is proved not only by the alleged cessation of the menses during pregnancy, but still more clearly by the fact which has not been sufficiently attended to, that in a large proportion of the cases of obstinate amenorrhœa, the *membrana decidua* exists, and that the first symptom of the return of the discharge is the coming away of the membrane. Of the identity of the two membranes there can be no doubt. It has been ascertained by Dr. Baillie and many other competent judges. ED.

neither does it coagulate. In many instances, a great quantity has been retained for many months in the uterus and vagina, but it has never been found clotted when it was evacuated.

Menstruation has been attributed to the influence of the moon, to the operation of a ferment in the blood, or in the uterus, to the agency of a general or local plethora, or to the existence of a secretory action in the uterus. (*d*) The last

(*d*) I am too, very much inclined to believe that menstruation results from a secretory action of the uterus. Every other theory on the subject is indeed totally irreconcilable with facts. I will briefly enumerate the leading arguments by which the doctrine may be defended.

1. That the uterus in its villous and vascular structure resembles in some degree a gland, and also, in its diseases, being equally liable to scirrhus, cancer, &c. &c.

2. That, like other secretory organs, blood is very copiously diffused through it.

3. That by the arrangement of its vessels, it is evidently designed that the circulation should be retarded for the purpose of secretion. The arteries are not only exceedingly convoluted, but they are larger and with thinner coats than their corresponding veins. Thus, Haller says, "the blood is brought to the womb in greater quantity, and more quickly through its lax and ample arteries, and on account of the rigidity and narrowness of the veins, it *returns with difficulty*."

4. That, in common with other secretions, menstruation is often, at first, imperfectly done, and is subject afterwards to vitiation and derangement. At its commencement the discharge is commonly thin, colourless, and deficient, and recurs at protracted and irregular intervals with pain and difficulty. In some of these particulars it strikingly resembles the seminal secretion.

5. That, in many of the inferior animals, during the season of venereal incalcescence, there is an uterine discharge which is undoubtedly a *secretion*. This answers seemingly the same end as menstruation, namely, giving to the uterus an *aptitude to conception*. Though this fluid generally differs from the menses in complexion, yet in some instances they are precisely similar. Whenever the venereal desire suffers a violent exacerbation from restraint, or other causes, the discharge in these animals becomes red. This has been more especially remarked in bitches kept from the male.

6. That the menses are a fluid *sui generis*, or at least, varying very essentially from the blood, having neither its colour nor odour, nor coagulability, and on chemical analysis present different results. These last circumstances are enough alone to establish the theory. If the menstrual fluid be not blood, what is it?

of these is the most probable opinion; but as this work is meant to be practical, I think it wrong to devote more time to the discussion of theories and speculations. The use of menstruation, seems to be to preserve the womb in a fit state for impregnation; at least, we know, that the presence of menstruation is generally necessary to, and indicates a capability of, conception.

As the female system is more irritable during menstruation than at other times, and as changes effected in the system, or in particular organs, at that time, may come to interfere with the due performance of the uterine action, it is a general and proper custom with physicians, and a practice consonant to the prejudice of women themselves, not to administer active medicines during the flow of the menses. It is also proper, that indigestible food, dancing in warm rooms, sudden exposure to cold, and mental agitation, especially in hysterical habits, be avoided as much as possible. By neglecting these precautions, the action may either be suddenly stopped, or spasmodic and troublesome affections may be excited.

7. To the objection that the uterus is not sufficiently glandular for the function of secretion, it has been, I think, very satisfactorily replied, that there is hardly a viscus or surface of the body which is not competent to the secretion of a fluid. It would really seem that no operation of the animal economy requires a less complex apparatus. Of what indeed does a gland consist, except a congeries of vessels? Even the most perfect of the secretions are affected by this simple contrivance. If a few vessels, "creeping over the coats of the stomach," can secrete the gastric liquor, why may not the infinitely more glandular organization of the uterus elaborate the menstrual fluid? Who originally suggested the theory of secretion I have not been able to ascertain. It has been ascribed to one of the Hunters, but I can find no trace of it in the writings of either of them. I am told that the theory was first published in a thesis at Edinburgh, by Dr. Craven, in the year 1778, which I have never seen. ED.

CHAPTER XII.

Of Diseased States of the Menstrual Action.

SECTION FIRST.

AMENORRHŒA, or absence of the menses, has been divided into the retention, or *emansio mensium*, and the suppression of the menses. By the first term, we are to understand, that the menses have not yet appeared, the action being longer than usual of being established. By the second, is meant the interruption of the action which has already been established, and hitherto performed.

The retention of the menses is very generally attended with chlorosis, or a feeling of weariness and debility, with dislike to active employment; a pale or sallow complexion, cachetic appearance, œdematous swelling of the legs and feet; complaints of the stomach, such as flatulence, acidity, loathing of food, but craving for indigestible substances, as chalk, lime, or cinders; pains of the head, and different parts of the body; swelling of the belly, with hysteric symptoms, such as palpitation, or dyspnœa; and if this state be not soon removed, it is apt to end either in consumption or dropsy.

The menses may, from one person not arriving so early as another at puberty, be longer in appearing in some women than in others; and in such cases, no peculiar inconvenience attends the retardation. But when the retention proceeds from other causes, it is to be considered as a disease; and generally, is to be attributed to a want of vigour in the system, by which, not only a new action is prevented from being formed, but also those which were formerly performed become impaired. In some cases, indeed, the absence of the menses depends upon the malformation of the organs of generation, a deficiency of the ovaria, (e) or an imperfect deve-

(e) There is much reason to believe that an influence some how derived from the ovaries excites the uterus to the menstrual effort.—Certain it is, that in several instances a permanent suppression of the menses has fol-

lopment of the uterus; but in far the greatest number of instances the action is postponed, merely from general debility of the system; and accordingly, the most successful mode of treatment consists in improving the health, and increasing the strength of the patient. This is to be done by regular exercise, proportioned to the ability of the person; the use of the cold bath every day, succeeded by frictions with dry flannel, or a soft brush; a nourishing and digestible diet with a proper portion of wine; the administration of tonic medicines, as bark, but particularly preparations of iron, such as chalybeate waters, tincture of muriated iron, or the precipitate obtained by adding potash to a solution of sulphate of iron. Strict attention must be paid to the state of the bowels, which, in this disease, are generally torpid, and have great power of communicating, to the rest of the system, a similar state. Besides this general plan, it has also been proposed, to excite more directly the uterine action, by marriage, and the use of emmenagogues; but with respect to the latter part of the proposal, I must observe, that some of these, if rashly employed, may, from their stimulating qualities, do harm; and they do not generally succeed without the use of such means as tend to invigorate and improve the system. Should the tonic plan, however, fail, then we may employ some of those medicines, which will be presently mentioned.

Suppression of the menses is naturally produced by pregnancy, and, very generally, by such diseases as tend greatly to weaken the patient. The first of these causes is soon recognised, by its peculiar effects. In the second, the effect is often mistaken for the cause, the bad health being attributed to the absence of the menses, and much harm frequently done by the administration of stimulating medicines. But in such cases it will be found, upon inquiry, that before the

lowed the loss of these organs. May not amenorrhœa, oftener than we suspect, be occasioned by a diseased state of the ovaries? This, at least, was the opinion of the celebrated Cullen. Cases have also occurred where from original deficiency of the ovaries menstruation never took place. *Ed.*

menses were suppressed, the patients had begun to complain. In them, the irregularity of the menses is symptomatic, and generally indicates considerable debility, induced, perhaps, by great fatigue, bad diet, loss of blood, or long continued serous discharge, hectic fever, or dyspepsia. Such causes, likewise, as operate more directly in weakening the uterus, as for instance abortion, or excessive venery, may produce, for a longer or shorter period, a suppression of the menstrual discharge.

Suppression of the menses may be likewise suddenly occasioned by the operation of such causes, during menstruation, as can interfere with, or give disturbance to the action; such as cold, and passions of the mind. The suppression so produced may be quickly followed by disagreeable effects; and either owing to these effects injuring the health, or to the uterus not speedily recovering from the original affection, the suppression may continue for some months.

The immediate, and remote effects of suppression, are much modified by the previous state of the system, particularly with regard to irritability and plethora; and also by the condition of individual organs,* which, if already disposed to disease, may thus be excited more speedily into a morbid action. In many cases, nausea, tumour of the belly, and other indications of pregnancy, are produced.

It also sometimes happens, that in consequence of suppression of the menses, hemorrhage takes place from the nose, lungs, or stomach; and these discharges do, occasionally, observe a monthly period, but oftener they appear at irregular intervals.

When suppression of the menses takes place in consequence of some chronic and obstinate disease, such as consumption or dropsy, it would be both useless and hurtful to attempt, by stimulating drugs, to restore menstruation. But in those cases, where the menses are suppressed in conse-

* Baillou has observed, that both in young girls, and elderly women, when the menses are obstructed or irregular, the spleen sometimes swells; and subsides again, when the menses become regular. *De Virgine et Mulier. Morbis. tomus IV. p. 75.*

quence of cold, fear, or some removable cause, inducing debility of the frame, it is proper to interfere, both as the suppression is a source of anxiety to the patient, and also as the rational means of restoration tend to amend the health.

It is proper, in our curative plan, to recollect, that the suppression may take place in different circumstances of the constitution. It may occur with a debilitated chlorotic condition, in which case we are to proceed much in the same way as in retention of the menses; and along with the tonic plan of treatment, it will be proper to have recourse to the use of emmenagogue medicines, such as savin,* hellebore,† myrrh, madder, or nitrous acid; and of these, the two first are the most active. (*f*) About the time when the menses are expected to appear, it is sometimes of advantage to exhibit an emetic, and to make use of the semicupium or pediluvium. Tourniquets have, about this time, been applied to the thighs, but not with much benefit. Electricity, directed so as to act on the uterus, is occasionally of service. (*g*) When along with

* From 5 to 10 grains of the powdered leaves may be given three or four times a day.

† A drachm of the tincture may be given twice or thrice daily.

(*f*) In suppression of the menses, evidently connected with atony of the uterus, I have had some success with the tinct. cantharid. I give it in the dose of ten drops, morning, noon, and night, gradually increasing the quantity till it amounts to two or three drachms in the day. The most obvious effects of this medicine, which I have observed, are an increase in the force of the pulse, and a very copious flow of urine.

From the sp. terebinth. I have also, under similar circumstances derived some advantage.

In one case of this complaint, in which there was general torpor of the system, accompanied with a low degree of temperature, I administered the phosphorus, but its use was interrupted too soon, by the prejudices of the patient, to judge of its efficacy. The phosphorus is a most powerful medicine, and requires great care in its administration. I gave of it, a tenth of a grain intimately blended with olive oil. Even, in this small dose it produced a universal glow and excitement. When properly regulated, phosphorus is both a safe, and I believe, an eminently useful remedy. In the armies of France, it has recently been employed, I am told, with extraordinary success in typhus fever, gangrene, &c.

Does it not also promise to do good in many other diseases, such as paralysis, epilepsy, chronic mania, &c. &c. ED.

(*g*) Blisters applied to the region of the uterus, at this time, are exceedingly useful. ED.

suppression of the menses, there is a febrile state, marked by heat of the skin, frequent pulse, flushing of the face, and irregular pains in the chest or abdomen, stimulating medicines are hurtful. It is, in this state, of advantage, to keep the bowels open, by some saline purgative, dissolved in a considerable quantity of water: and should there be dyspnoea, with pain about the chest, increased by inspiration, it will be proper to take away some blood. Should the skin still remain hot, the common saline julap will be of service. The febrile symptoms being removed, much advantage may be derived from a combination of myrrh, oxyde of iron, and the super-carbonate of potash; and should emmenagogues be thought advisable, the black hellebore is the best.

When a woman, upon the sudden suppression of the menstrual discharge, complains immediately of pain in the back and uterine region, or in the bowels, with or without febrile symptoms, the semicupium, and opiates combined with ipecacuanha, or the saline julap, will be of great service; or, if the symptoms be severe, some blood must be taken from the arm, and the bowels are to be opened. Should the menses not return at the next period, we must proceed as has been already directed.

Chlorosis, succeeding to abortion, laborious parturition, or fever, is often attended with symptoms much resembling phthisis pulmonalis. In many instances the pulse continues long frequent; there is nocturnal perspiration; considerable emaciation, with cough and pains about the chest; and yet the person is not phthisical, she suffers chiefly from debility; but if great attention be not paid to improve the health, the case may end in consumption; and hence, many consumptive women date the commencement of their complaints from an abortion, or from the birth of a child, succeeded by an hemorrhage. In chlorosis, the symptoms are induced, not by previous pulmonic affections, but by some other evident cause of weakness; the pulse, although frequent, is not liable to the same regular exacerbation, as in hectic; a full inspiration gives no pain, and little excitement to cough; the person can lie with equal ease on either side; the cough is not in-

creased by motion, nor by going to bed, but it is often worst in the morning, and is accompanied with a trifling expectoration of phlegm. It is not short, like that excited by tubercles, but comes in fits, and is sometimes convulsive; whilst palpitation, and many hysterical affections, with a timid and desponding mind, accompany these symptoms. The bowels are generally costive, and the person does not digest well. (1)

In chlorosis, attended with symptoms resembling phthisis, it is of considerable utility, to administer occasionally, a gentle emetic, and at the same time, the bowels must be kept open. Myrrh, combined with the oxyde of zinc, is, I think, of approved efficacy; and the ammonia, given in the form of an emulsion with oil, very often is effectual in relieving the cough. A removal to the country, and the use of moderate exercise on horseback, will contribute greatly to the recovery. The diet ought to be light, but nourishing. In many cases, milk agrees well with the patient, but it is not necessary to restrict her from animal food. Pain in the side may be removed, by the application of a warm plaster; and, if the cough be troublesome, the squill may be used, as an expectorant, and an opiate should be given at bed-time. If the skin be permanently hot, or irregularly hot and cold, without weakening perspiration, the tepid bath is of service, or small doses of saline julap may be given. Should the person be of a phthisical habit, and the symptoms increase or continue obstinate, it will be proper to remove her to a mild climate, or the southern part of the island. Emmenagogues are either useless or detrimental. (h)

(1) Although hysteria be not a diseased state of menstruation, yet, as it is a very general attendant upon deviations of that action, and a very frequent and distressing complaint, to which women are subject, it will be proper to notice it briefly at this time.

In the well marked hysteric paroxysm, a sense of pain or fulness is felt
in

(h) In chlorosis, and indeed, in all the forms of amenorrhœa, I have found purges, I think, very beneficial. Calomel and aloes combined, I have preferred in these cases. To be useful it is necessary to continue this plan of treatment for weeks.

Professor Hamilton of Edinburgh, who is a most skilful practitioner in female

SECTION SECOND.

It sometimes happens, that the uterus, instead of discharging a fluid every month, forms a membrauous or organized

in some part of the abdomen, most frequently about the umbilical region, or in the left side, betwixt that and the stomach. This gradually spreads, and the sensation of a ball is felt passing along. It mounts upwards, and by degrees reaches the throat, and impedes respiration, so as to give the feeling of a globe in the œsophagus, obstructing the passage of the air, and, as Van Swieten observes, the throat appears sometimes really to be distended. The patient now falls down convulsed, and apparently much distressed in breathing, uttering occasionally shrieks, something like the crowing of a cock, or sobbing violently, or otherwise indicating a spasm of the muscles of respiration. She is generally pale, and frequently insensible, at least during part of the fit, and seems to be in a faint; but when she recovers, she is conscious not only of having been ill, but of many things which passed in a state of apparent insensibility. After remaining for some time in a state of considerable agitation of the muscular organs, the affection abates, and the patient remains languid and feeble, but gradually recovers, and presently is restored to her usual health. This restoration is accompanied with eructation, which indeed often takes place during the paroxysm; and also by the discharge of limpid urine, which, by Sydenham, is considered as a pathognomonic symptom of hysteria. Headach is also apt to follow a fit.

Besides producing these regular paroxysms, hysteria still more frequently occasions many distressing sensations which are so various, as not to admit of description. Of this kind are violent headach, affecting only a small part of the head, sudden spasms of the bowels, dyspnœa, with or without an appearance of croup, and sometimes attended with a barking cough, irregular chills, and sudden flushings of heat, spasmodic pains, palpitation, syncope, &c. These, if severe, or frequently repeated, are generally attended with a timid or desponding state of mind.

During an hysterical fit, the patient is to be laid in an easy posture, a free admission of cool air is to be procured, the face is to be sprinkled with cold vinegar or hungary water, volatile salts are to be held to the nostrils, and if she can swallow, 30 drops of tincture of opium are to be administered, with the same or a greater quantity of ether, in some carminative

female complaints, advises very strenuously, I recollect, a mixture of digitalis and the sp. æther. nitros. in chlorosis. The former, he directs in large doses, as much as ten drops of the tincture every hour. It would seem that digitalis is only applicable to those cases of the disease, which are attended with œdematous swellings, but he does not thus restrict its administration. I have never had occasion to try the medicine. But certain it is, that among the best of the emmenagogues, are the active diuretics. *En.*

substance, which is expelled with pains and hemorrhage, like abortion. Morgagni* describes this disease very accurately. The membrane, he says, is triangular, corresponding to the shape of the uterine cavity; the inner surface is smooth, and seems as if it contained a fluid, and that it does so, I have no doubt from my own observation; the outer surface is rough and irregular. According to Morgagni, the expulsion is followed by lochial discharge. (i)

minative water; or should there be a tendency to syncope, a drachm of the spiritus ammoniac aromaticus may be conjoined.

A similar combination of opium is the most powerful remedy in the different hysterical affections above enumerated. But it is further useful to remark, 1st, that local pain is frequently removed by sinapisms, with or without the internal use of opium; 2d, that severe affections of the organs of respiration sometimes yield more speedily to emetics than to antispasmodics, or may even require the use of the lancet, but this mode of evacuation is to be avoided as much as possible, as it increases a disposition to the disease; 3d, that irregular action of the heart, besides requiring powerful antispasmodics, demands, more than any other symptom, during the attack, a state of rest, and the removal of every thing which can agitate the mind; 4th, continued insensibility, or coma, is a very dangerous symptom, as it may end fatally: the lancet ought to be early, but not largely used, the bowels should be emptied, and the head covered with a blister.

The prevention of regular hysteric fits, or of individual symptoms, is to be attempted by a tonic plan, especially by the use of the cold bath, moderate exercise, preserving a regular state of the bowels, or even giving pretty powerful purges, and the administration of preparations of steel; the mind ought also to be called as much as possible from brooding over the disease, for in hysteria, the patient is frequently desponding, and anticipating many evils. The menstrual action, if irregular, must, if possible, be rectified by appropriate remedies. The diet should be light, and rather sparing, and all causes of debility must be avoided.

If particular symptoms should be frequently repeated, or the fits occur often, it may be useful to conjoin along with this plan, the exhibition of some antispasmodic medicine, such as valerian, assafoetida, or camphor.

Hysteria may occur during the course of other diseases, or in the stage of convalescence from them. In the first case, it may cause some deviation from the regular progress or train of symptoms of the disease, and, it is to be feared, sometimes calls the attention of the practitioner from more serious parts of the patient's malady.

* Vide Epist. XLVIII. art. 12.

(i) With a view to expel this membrane, the volatile tincture of gum guaiacum is recommended. I have employed it very little, and with no success. Of late, the polygala senega has been introduced, by Dr. Harts-

Dr. Denman supposes, that no woman can conceive who is affected with this disease; but some cases, and amongst others, that related by Morgagni, are against this opinion. Mercury, bark, chalybeates, myrrh, and injections, have all been tried, but without much effect. Time, in general, removes the disease better than medicine, which is only to be advised for the relief of pain, weakness, or any other symptom which may attend, or succeed to this state. A knowledge of this disease may be of great importance to the character of individuals.

SECTION THIRD.

Some women menstruate with great pain, and the discharge generally takes place slowly. This disease is called dysmenorrhœa. It seems to be dependent on an imperfect menstrual action; and this opinion is supported by observing, that mild emmenagogues give relief, but those of a stimulating quality are not so proper. Saffron, madder, or rue, are often of service; at the same time, the warm bath, or semicupium, is to be employed for a day or two previous to menstruation, and should be repeated every night, during its continuance. Opiates, combined with ipecacuanha, should also be given, to abate the pain; and the bowels are to be kept open, by mild saline laxatives. (k)

horne, of this city, in the treatment of amenorrhœa, and, as he acquaints me, with more advantage than any other remedy. I have not as yet had an opportunity to use it. But I place implicit confidence in the reports of this excellent practitioner.

If, as is alleged, the senega has a peculiar power in detaching the membrane of croup, it is presumable that it is well adapted to the cases of amenorrhœa we are now noticing.

Dr. Hartshorne advises about an ounce of a strong decoction of the medicine every two hours, and especially near the time that the menstrual effort is expected to be made. EN.

(k) Nothing I have found to afford more relief in painful menstruation than large doses of opium and camphor. This medicine, however, will often fail. The extracts of hyoscyamus has been highly extolled. But it is certainly inferior to opium. It would be well, I think, to try the datura stramonium, not only in this, but in amenorrhœa generally. I have had no experience with it.

Blisters,

SECTION FOURTH.

The menses may be abundant in quantity, at the regular period; or they may return too copiously, once in three weeks, or even more frequently. This morbid condition, which is called menorrhagia, may take place, either along with a considerable frequency of pulse, and febrile heat, sometimes preceded by chilliness; or, with languor, cold skin, and marks of torpor, and debility of the arterial system. In both cases, the discharge is generally accompanied with pain in the back and uterine region. The fluid evacuated is of two kinds; the menstrual secretion increased in quantity, which does not coagulate, but is sometimes preceded, and succeeded by a slight discharge of brownish serum; and pure blood, which often forms coagula in the vagina. (1) All profuse discharges are of this last kind.

When the hemorrhage is considerable, or frequently repeated, it produces the usual effects of loss of blood, and may thus either immediately or remotely prove a cause of death. When the hemorrhage is more moderate, or when the menstrual discharge is only somewhat increased in quantity, or repeated at shorter intervals than a lunation, the constitution suffers more slowly, and in many cases very slightly, the woman being only somewhat weaker than usual. This state, however, may dispose to other diseases, and it proves a cause of sterility.

Copious menstruation often proceeds from irritation of

Blisters, in those cases, should not be omitted. When applied to the sacrum, or the lowest of the lumbar vertebra, they will sometimes remove the pain and bring on a free discharge of the menses. There is, however, unfortunately in private practice a great repugnance to the application of blisters to these parts. ED.

(1) This is a correct distinction. I have repeatedly observed profuse hemorrhages from the uterus. They often recur with the periodical regularity of menstruation. In these cases, the uterus, owing to some morbid derangement, is unable to perform its true secretory action. Nor are these hemorrhages peculiar to the uterus. There is, indeed, hardly a part of the body from which vicarious discharges of blood, under such circumstances, have not taken place. ED.

the uterus, or the repeated excitement produced by excessive venery. It may also be occasioned by debility of the uterine system, brought on by abortion, or frequent and laborious parturition; or it may be connected with general feebleness of the constitution. In some cases, it appears to arise from that state of the arteries which disposes to hemorrhage; and this is particularly the case in those who are of a delicate make, and inclined to phthisis.

Hemorrhage from the uterus is different from copious menstruation, and is generally dependent either upon those remote and occasional causes which produce hemorrhage from other vessels, or on an enfeebled but overacting state of the uterine vessels, existing during the time of menstruation: and hence, in low fevers, a very copious discharge of blood sometimes takes place from the uterus, and proves fatal with great rapidity.

Married women are much more subject to increased menstrual discharge than virgins; and it is very rare for the latter, especially if healthy, to be affected with hemorrhage from the womb.

The hemorrhage from the uterus is to be managed upon general principles. When it depends upon plethora, or strong action of the vessels, we must have, if the pulse require it, recourse to blood-letting; we must give digitalis to make the circulation slower, (*m*) and apply cold both generally and locally. The patient must be kept at rest in a horizontal posture; and opiates are to be given, if there be much pain and irritation. The food ought to be sparing, and every thing warm is to be avoided. If necessary, the vagina is to be plugged. If a great effect have been produced upon the system by the hemorrhage, then the strength must be supported by nourishment and cordials. In order to prevent a return, the patient, if plethoric, must be put on spare and dry diet, the sleep abridged, the exercise increased, the

(*m*) Digitalis is rather an unsafe medicine in uterine hemorrhages. I have heard of several instances, and knew of one, where the bleeding became most alarming and profuse under its operation. ED.

bowels kept open, and, at the same time, the constitution invigorated by the cold bath, which is by no means incompatible nor inconsistent with the other means. When the hemorrhage depends on debilitating causes, such as typhus fever, we trust chiefly to the plug, and support the strength by cordials. In neither case have astringents, given internally, any good effect; but styptic injections are often of singular utility. In repeated discharges, emetics are sometimes of service, by exciting uterine contraction. M. Gendron, in the seventh volume of the *Recueil Periodique*, relates an excellent instance of their effects on a woman, who had obstinate and alarming hemorrhage, which resisted even the use of plugs, and caused frequent syncope. The discharge stopped after giving ipecacuanha.

In copious, or too frequent menstruation, we must, if the patient be plethoric, the skin warm, and the pulse above the usual standard, sometimes detract blood; but generally it is better to keep the bowels lax, and give occasionally saline julaps or antimonial, till the febrile state be removed: after which the disease may go off, but if not, tonics will then do good. In the great majority of cases, however, there is rather an opposite state of the system, requiring a directly invigorating plan, such as the cold bath, preserving the bowels in a regular state, gentle exercise in the country, the use of a nourishing and easily digestible diet, with wine and tonic medicines, or chalybeate water, such as that of Tunbridge. Sometimes the use of the aqua ammoniæ, in considerable doses, is attended with great advantage: cold water may, with much benefit, be poured daily upon the back, or injected frequently into the vagina. In obstinate cases, emetics, such as ipecacuanha, or the sulphate of zinc, are of service. It is necessary to avoid whatever may act as an exciting cause, such as heated and crowded rooms, much dancing, long walks, venery, &c. (*n*)

(*n*) Hitherto, those uterine hemorrhagies which observe a periodical regularity in their recurrence, have been, very commonly, confounded with an increased flow of the menses. To this error we are, perhaps, to impute, in some degree, the uncertainty of our practice in these complaints.

My

Symptomatic discharges, produced by polypus, cancer, &c. have already been considered.

CHAPTER XIII.

Of the Cessation of the Menses.

ABOUT the period when the menses should cease, they become irregular, and sometimes are obstructed for two or three months, and then for a time return. This obstruction, like many other cases of retention and suppression of the menses, is accompanied with swelling of the belly, sickness, and loathing of food. These effects are frequently mistaken for pregnancy: for, as La Motte remarks, many women have such a dislike to age, that they would rather persuade themselves they are with child, than suppose they are feeling any

My own experience confirms the observation of Mr. Burns, "that all profuse discharges from the uterus are hemorrhagies." These are often to an extent to threaten immediate danger. Menorrhagia, on the contrary, even when most copious, is never alarming, except in its remoter consequences. The former complaints may be commonly checked, like other hemorrhagies, by the acetate of lead, by combinations of opium and ipecacuanha, by bleeding where the pulse is full and excited, &c. But the latter, as resulting from a natural secretory action of the uterus, will run on to the usual period of its termination, whatever may be done, unless the discharge be suppressed by some rash and violent interference. In *menorrhagia proper*, little else is required during the flow than rest, a cool room, some acidulated drink, as cremor tartar, to open the bowels, and occasionally, if there be pain or irritation, an anodyne. But, in the intervals of menstruation, we should endeavour by various means to make such an impression on the system as will restore to the uterus its healthy actions. The remedies, in these cases, are well known. Before dismissing this subject, it may, however, be useful to mention that professor Hamilton, of Edinburgh, urges the most intrepid employment of opium in periodical hemorrhagies. He says, that he has given, in a case, as much as twelve grains of it in twenty four hours with singular advantage. Though it is difficult with me to reconcile the efficacy of such doses of opium in hemorrhagy with the views I have adopted of the mode of operation of the medicine, yet from my faith in the judgment of Dr. Hamilton, I would, if necessary, not hesitate to make the experiment. ED.

of the consequences of growing old; and this persuasion they indulge like Harvey's widow, *donec tandem spes omnis in flatum et pinguedinem facesseret*. In this situation, the belly is soft and equally swelled, and enlarges more speedily after the obstruction, than it does in pregnancy. No motion is felt, or, if it be, it is from wind in the bowels, and shifts its place. Exercise, chalybeates, and laxatives, are the proper remedies in this case.

The period at which the menses cease, or "the time of life," is considered as critical, and, without doubt, it is an important epoch. If there be a tendency to any organic disease, it is greatly increased at this time, more especially, if it exist in the uterus or mammæ; and indeed, the cessation of the menses does of itself seem, in some cases, to excite cancer of the breast. Diseases of the liver, also, make greater progress at this period, or first appear soon after it. Dyspeptic affections are still more frequent. When there is no tendency to local disease, it is very common for women, after the menses cease, to become corpulent, and sometimes they enjoy better health than formerly.

From an idea of the cessation of menstruation being uniformly dangerous, some, by the use of emmenagogues, tried to prolong the discharge; others, by issues, endeavoured to prevent bad effects. The first of these means is foolish and hurtful, the last is not often necessary. When the health is good, no particular medicines are requisite; but if there be a tendency to any peculiar disease, then the appropriate remedies must be employed.

CHAPTER XIV.

Of Conception.

CONCEPTION seems to depend upon the influence of the semen exerted on the ovaria, through the medium of the rest of the genital system; for women have conceived when semen has been applied merely to the vulva, the hymen being entire. (*o*) In consequence of this, an ovum is excited into action; it enlarges; the peritoneal covering becomes more vascular, and is made to protrude a little. Then that part which covers the vesicle is absorbed, whilst the vesicle itself escapes into the fallopian tube, which had, at the time of impregnation, embraced the ovarium; and thus it is conveyed into the uterus. When the ovum is received into the tube, and either carried into the womb, or brought a certain way along the canal, the tube loosens from the ovarium, and the absorbed spot on the surface of the ovarium is perceptible. This afterwards forms a kind of cicatrix, called corpus luteum. (*p*)

(*o*) A collection of cases of this kind will be found in a work entitled, "Speculations on Impregnation." ED.

(*p*) Amid the uncertainty which exists on the subject of generation, there seem to be some points very accurately ascertained. Thus, from the experiments of De Graaf on rabbits, we long since learned,

1. That the ovaries are the seat of conception.
2. That one or more of their vesicles become changed.
3. That the alteration consists in an enlargement of them, together with a loss of transparency in their contained fluid, and a change of it to an opaque and reddish hue.
4. That the number of vesicles thus altered, corresponds with the number of fœtuses, and from the former are formed the true ova.
5. That these changed vesicles, at a certain period after they have received the stimulus of the male, discharge a substance, which, being laid hold of by the fimbriated extremity of the fallopian tube, and conveyed into the uterus, soon assumes a visible vascular form and is called an ovum.
6. That these rudiments of the new animal, which, for a time, manifested no arrangement of parts, afterwards begin to elaborate and evolve the different organs of which the new animal is composed. To these facts we may add, that the calyx, or capsula, which formed the parietes of the vesicles, thickens, by which the cavity is diminished. This cavity, together with the opening through which the fœtal rudiments escaped, becomes obliterated, and from the parietes of

It would appear, that although an ovum be impregnated, yet, by various causes, the process afterwards may be interrupted; the ovum shrivels, and is absorbed. If there be an impervious state of the tubes, or any conformation or condition, rendering it impossible for a child to be supported, the ovum decays, and the woman is barren. Or if such a state be induced after impregnation, and before the ovum descends, the process stops.*

the vesicles having acquired a yellowish hue, they are called corpora lutea. Such was pretty nearly the extent of our information respecting this mysterious function, when the celebrated Mr. Haighton some few years ago, engaged in an experimental investigation of the subject, and established, among others, the following additional points.

1. That the existence of the corpora lutea, as was previously alleged by De Graaf, is incontestible proof of impregnation having preceded.

2. That, contrary to the opinions of most physiologists, neither the vesicle of the ovary is ruptured, nor the fallopian tube applied to the ovary during the act of coition; but, that several days elapse before the vesicle arrives at sufficient maturity to discharge its contents, till which time, the fallopian tube does not change its ordinary position.

3. That, in contradiction to the observations of De Graaf, Malpighi, and Cruikshank, the substance which passes from the ovary is merely a gelatinous fluid, which assumes nothing of the circumscribed vesicular character of the ovum till a considerable period after it is deposited in the uterus.

4. That the semen masculinum is applied to the ovary neither by the fallopian tubes, nor by absorption, nor in the form of aura seminalis.

He concludes, therefore, and with great probability, that fecundation is performed by that "law of the animal system termed sympathy, or consent of parts." The doctrine is thus stated:

The semen first stimulates the vagina, os uteri, cavity of the uterus, or all of them.

By sympathy, the ovarian vesicles enlarge, project, and burst.

By sympathy the tubes incline to the ovaries, and having embraced them, convey the rudiments of the fœtus to the uterus.

By sympathy the uterus makes the necessary preparations for perfecting the formation and growth of the fœtus: and finally,

By sympathy the breasts furnish milk for its support after birth.

We recommend very strenuously the perusal of Mr. Haighton's paper, not only on account of the richness of its matter, but as being the very best model we have ever met with, for medical experimental inquiries. ED.

* Dr. Haighton found, that by dividing the tubes, after a rabbit was impregnated, the ova were destroyed. Or if only one tube was cut, and the female afterwards became impregnated, corpora lutea were found in both

In the human subject only one ovum is generally impregnated by one seminal application, but sometimes two or more may be carried down into the uterus; and even after one ovum has reached the uterus, and grown to a certain degree within it, we find, that it is possible for a second to be excited into action, and brought down into the womb, where it is nourished and supported.*

From the experiments of Mr. Hunter,† it is probable, that each ovarium is capable of producing only a certain number of ova: and that if one ovarium be removed or rendered useless, the constitution cannot give to the other, the power of producing as many ova as could have been done by both.

It has been attempted to ascertain what age, and what season, was most prolific. From an accurate register made by Dr. Bland, it would appear, that more women, between the age of twenty-six and thirty years, bear children, than at any other period. Of 2102 women, who bore children, 85 were from fifteen to twenty years of age; 578 from twenty-one to twenty-five; 699 from twenty-six to thirty; 407 from thirty-one to thirty-five; 291 from thirty-six to forty; 36 from forty-one to forty-five; and 6 from forty-six to forty-nine.

At Marseilles, M. Raymond says, women conceive most readily in Autumn, and chiefly in October; next in Summer; and lastly in Winter and Spring; the month of March having fewest conceptions. M. Morand again says, that July, May, June, and August, are the most frequent dates of conception; and November, March, April, and October, the least frequent in the order in which they are enumerated. I have been favoured with a register, for ten years, of an extensive parish in this place; from which it appears, that the greatest number, both of marriages and births, take place in May, and the fewest births in October. From this we would consider August and September to be most favorable to conception; but it is evident, that these conclusions are liable to great uncertainty.

Women are supposed to conceive most readily immediately after the rupture of the ovary, but no ova were found in the tube or horn of the uterus, on the injured side. *Phil. Trans.* vol. LXXXVII. p. 175, &c.

* *Vide Med. and Phys. Journ.* vol. XVII. p. 489.

† *Vide Phil. Trans.* vol. LXXXVII.

ately after the menstrual evacuation, but it is doubtful how far this opinion is correct; and therefore, in calculating the time when labour should be expected, it is usual to count from a fortnight after the last appearance of the menses, or to say that the woman will be confined at the end of the forty-second week from that period.

The process of gestation usually requires forty weeks, or nine calendar months for its completion; but many circumstances may render labour somewhat premature, and it is even possible for the process to be completed, and the child perfected to its usual size, a week or two sooner than the end of the ninth month. On the other hand, it is equally certain, that some causes, which we cannot explain or discover, have the power of retarding the process, the woman carrying the child longer than nine months,* and the child, when born, being not larger than the average size. How long it is possible for labour to be delayed beyond the usual time, cannot easily be ascertained; but it is very seldom protracted beyond a few days, counting the commencement of pregnancy, from the day preceding that on which the menses ought to have appeared, had the woman not conceived.

CHAPTER XV.

Of the Gravid Uterus.

SECTION FIRST.

WHEN we compare the unimpregnated with the gravid uterus at the full time, we must be astonished at the change which has taken place during gestation, in its magnitude alone.

In the ninth month, the size of the womb is so much increased, that it extends almost to the ensiform cartilage of the sternum; and this augmentation it receives gradually, but not equally, in given times; for it is found to enlarge much faster in the later, than in the earlier months of pregnancy.

* By the law of this country, a child born six months after the marriage of the mother, or ten months after the death of the father, is considered as legitimate.

For a considerable time after conception, the uterus receives a very slow and trifling addition to its bulk; and instead of rising higher up into the belly, it falls rather lower down. It is not till towards the end of the third month, that the uterus can be felt rising above the pubis; although, at this period, it generally measures from the mouth to the fundus above five inches, one of which belongs to the cervix. In the fourth month, it reaches a little higher, and measures five inches from the fundus to the beginning of the neck. In the fifth, it has become so much larger, as to render the belly tense, and may be felt, like a ball, extending to a middle point between the pubis and the navel, and measures about six inches from the cervix to the fundus. In other two months, it reaches to the navel, and measures about eight inches. In the eighth month, it ascends still higher, reaching to about half way between the navel and the sternum. In the ninth month, it reaches almost to the extremity of that bone, at least in a first pregnancy, when the tightness of the integuments prevents it from hanging so much forward as it afterwards does. At this time it generally measures, from top to bottom, ten or twelve inches, and is oviform in its shape. These calculations are not invariably exact, suiting every case, but admit of modifications.

In pregnancy, the mouth of the uterus is directed backward, whilst the fundus lies forward. This obliquity, however, does not take place until the uterus begins to rise out of the pelvis, and it always exists in a greater degree in those who have born many children.

From this position it appears, that the intestines can never be before the uterus, but must lie behind it and round its sides.

SECTION SECOND.

Previous to the descent of the ovum, the uterus begins to enlarge, especially at its upper part or fundus; and it is worthy of notice, that the posterior face of the uterus always distends more than the anterior one, as we ascertain, by examining the situation of the orifices of the fallopian tubes.

When the fundus begins to increase, it not only grows heavier, but also presents a greater surface for pressure to

the intestines above: it, therefore, will naturally descend lower down in the pelvis, and thus project farther into the vagina. In this situation the uterus will remain, until it becomes so large as to rise out of the pelvis.

Until this ascent of the uterus, which takes place about the fourth month, the fundus and body form the whole of the cavity; but then the cervix begins also to be developed: so that by the end of the fourth month of pregnancy, one quarter of its length has become distended, and contributed to augment the uterine cavity; the other three-fourths, which remain projecting, become considerably softer, rather thicker, and more spongy. In another month, one half of the cervix is distended, and the rest is still more thickened, or the circumference of the projecting part greater: the uterus has also risen farther up, consequently the vagina is more elongated. In the sixth month, the neck is still more stretched. In the seventh, we may, with the finger, distinguish the head of the child pressing on the lower part of the uterus, which we can seldom do before this. In the eighth month, the neck is completely effaced, and its orifice is as high as the brim of the pelvis. The ninth month affects the mouth of the uterus chiefly. The alterations of the cervix are discovered, by introducing the finger into the vagina, and estimating the distance betwixt the os uteri and the body of the uterus, which we feel expanding like a balloon.

The mouth of the uterus is merely the termination or extremity of the cervix, and consists of two lips of the same consistence with the rest of the uterus. When the womb is not gravid, these are always open, and will admit the tip of the finger. But, soon after conception, the os uteri is closed, except at the very margins, at the same time that it gradually becomes softer. In proportion as pregnancy advances, and the cervix stretches, the lips shorten until they sometimes totally disappear; but more frequently, they continue to project a little, until labour commences. The lower part of the cervix, in the course of gestation, and the inner border of this opening, in the ninth month, for about an inch round, is full of glandular follicles, which secrete a thick viscid mucus. This extends from the one side to the other, and fills up the mouth

of the uterus very perfectly, being thus interposed as a guard betwixt the membranes and any foreign body. By maceration, it may be extracted entire, when a mould of the lacuna will be obtained by floating it in spirits, saturated with fine sugar.

SECTION THIRD.

Vesalius describes three strata of muscular fibres, transverse, perpendicular, and oblique. Malpighi describes them as forming a kind of net work; whilst Ruysch maintains that they appear at the fundus, in concentric planes, forming an orbicular muscle. Dr. Hunter paints them as transverse in the body of the uterus, but, at the fundus, describing concentric circles around each of the fallopian tubes. These contradictions of anatomists serve to show, what may really be seen by examining the uterus; that the fibres are not very regular and distinct in their course, but exhibit confusion, rather than any well marked figure.

The increased size of the uterus is by no means chiefly owing to the addition of muscular fibres. These become indeed larger, and better developed, but do not contribute so much to the increase, as the enlargement of the blood vessels, and perhaps the deposition of cellular substance. This gives the uterus a very spongy texture, and makes it so ductile, that a small aperture may be greatly dilated, without tearing. From examination, it appears, that although the whole uterus does not grow thinner in proportion to its increase, it yet does, at the full time, become thinner near the mouth; whilst the fundus continues the same, or perhaps grows a little thicker, at least where the placenta is attached.

SECTION FOURTH.

No one, who understands the anatomy of the ligaments of the unimpregnated uterus, will be surprised to find a great change produced in their situation and direction, by pregnancy. The broad ligament, which is only an extension of the peritoneum from the sides of the uterus, is, in the ninth month, by the increase of the viscus, spread completely over its surface; and, consequently, were we to search for this ligament, we would be disappointed. Its duplicatures are all

separated, and laid smoothly over the uterus. It will therefore be evident, that we can no longer find the ovaria and fallopian tubes floating loose in the pelvis, nor the round ligaments running out at an angle from the fundus uteri to the groin. All these are contained within duplicatures of the peritoneum, or ligamentum latum; and, therefore, when this is spread over the uterus, it follows, that the ovaria, tubes, and round ligaments, cannot now run out loosely from the uterus, but must be laid flat upon its surface, and bound down by the stretched peritoneum. This description applies only to the state of the uterus in the full time. Earlier, we may readily observe the broad ligament flying out, and allowing the ovaria free play.

SECTION FIFTH.

The origin, and distribution of the blood-vessels of the uterus, have been already noticed; I have only to add, that in pregnancy, they become prodigiously enlarged. Even before the ovum enters the uterus, we find the uterine artery as large as the barrel of a goose quill, and sending large branches round the cervix uteri, and up the sides of the womb. As pregnancy advances, the trunks, but especially the branches, become still larger, particularly near the implantation of the placenta. The veins are enlarged in the same proportion with the arteries. They are destitute of valves, and receive the name of sinuses.

The lymphatics are very large and numerous. The nerves have already been described.

SECTION SIXTH.

Although many opportunities have occurred to anatomists, of examining not only abortions, but also the uterus itself, at an early period of gestation; yet it has not been exactly determined at what precise time the ovum enters the womb, or when the fœtus first becomes visible. This may depend, partly on want of information respecting the exact number of days which have intervened betwixt impregnation and our examination; and partly, perhaps, upon irregularities of the process in the human female, induced by various causes.

We know that considerable changes take place in the cavity of the uterus, before the ovum descends, and these generally are not accomplished in less than twenty or thirty days. In a very accurate dissection performed by the late Mr. Hunter, and related by Mr. Ogle,* no ovum could be found either in the uterus or the tubes, although there is reason to suppose that nearly a month had elapsed from the time of impregnation. I have examined very carefully three uteri about the same period, and have not been able to discover either ovum or fœtus. If we admit analogical evidence on this subject, we shall be more confirmed in a belief that the ovum does not, in the human female, enter the uterus, until at least three weeks after conception.† In the rabbit, whose period of gestation is only thirty days, the ovum is not to be found in the uterus earlier than the fourth day, according to Mr. Cruikshank,‡ or the sixth according to Dr. Haughton; and the fœtus is not visible till the eighth day, when it may be seen by dropping vinegar on the ovum.§ Haller found, that in the sheep, whose term of gestation is five months, the ovum does not enter the uterus till the seventeenth day,|| and the fœtus is not visible till the nineteenth.

The ovum, at first, contains no visible embryo; nothing but vesicular involucra appear. This point is fully established by examining the inferior animals, and is especially confirmed by the incubation of the eggs of fowls.

When the human fœtus is first distinctly visible through the membranes, it is not above a line in length, and of an oblong figure. By the sixth week, it is seen slightly curved, resembling, as it floats in the water, a split pea. In the seventh week, it is equal in size to a small bee; and, by the conclusion of the second month, it is bent and as long as a kidney bean.

* Transactions of a Society, &c. vol. II. art. vi.

† Dr. Combe possessed a preparation, where there was an appearance of a very minute fœtus. From peculiar circumstances, two and twenty days were supposed to have elapsed from the time of conception. Vide Dr. Hunter's Anatom. Descrip. p. 87.

‡ Phil. Trans. vol. LXXXVII.

§ Phil. Trans. vol. LXXXVII. p. 204.

|| Elementa, tom. VIII. p. 59.—Opera Minora, tom. II. p. 434.

The embryo, at first, appears like two oval bodies of unequal size, united together by a neck. The one of these is the head, the other the trunk. The head is a membranous bag, which is large in proportion to the body; but after the first month of its growth, the relative size decreases: on opening it, nothing but a soft pulp is found within. In a little time the face appears, the most prominent features of which are the eyes; these are proportionally larger in the embryo than in the advanced fœtus, and are placed low down. The face itself is small, compared to the cranium. The nose does not appear until the end of the second month; but somewhat sooner, we may observe two apertures in the situation of the nostrils. The mouth, at first, is a round hole, but by degrees lips appear; and after the third month, they are closed, but do not cohere. The external ear is not formed at once, but in parts, and it is not completed before the fifth month; even then, it differs, in its shape, from the ear after birth. It is at first like a gently depressed circle.

The extremities early appear like the buds of a plant. The arms are directed obliquely forward, toward the face, and are larger than the inferior extremities. The genitals, for a time, are scarcely to be observed; but in the third month, they are large, in proportion to the body.

The fœtus does not grow in a uniform ratio, but, as has been observed, by the learned anatomist, Dr. Soemmering, the increment is quicker in the third than in the second month. In the beginning of the fourth, it becomes slower, and continues so until the middle of that month, when it is again accelerated. In the sixth month, it is once more retarded, and the progression remains slow during the rest of gestation.

The proportion between the weight of the fœtus and its involucra, is reversed at the beginning and the end of gestation. When the embryo does not weigh more than a scruple, the membranes are as large as a small egg. Even when the fœtus is not larger than a fly, the membranes resemble,

in shape and size, a large chesnut. On the other hand, at the full time, when the fœtus weighs seven pounds, the placenta and membranes do not weigh a pound and a half, and the proportion of liquor amnii is greatly lessened. In the twelfth week, the fœtus weighs nearly two ounces, and measures, when stretched out, about three inches. The membranes are larger than a goose's egg, and weigh, if we include the liquor amnii, several ounces. In the fourth month, the fœtus is about five inches long. In the fifth month, it measures six or seven inches. In the six month, the fœtus is perfect and well formed, measures eight or nine inches, and weighs about one pound troy; whilst the placenta and membranes weigh about half a pound, exclusive of the liquor amnii. The fœtus is now so vigorous in its action, that there have been instances, though most rare, of its continuing to live, if born at so premature a period. In the seventh month, it has gained about three inches in length, and is now more able to live independent of the uterus; though even at this time, the chance of its surviving six hours from birth is much against it. In the eighth month, it measures about fifteen inches, and weighs four, or sometimes five pounds, whilst the involucra weigh scarcely one. These calculations vary according to the sex of the child, and also the conformation of the parents. Male children generally weigh more than females. Dr. Rœderer* concludes, from his examinations, that the average length of a male, at the full time, is twenty inches and a third, whilst that of a female is nineteen inches and seventeen eightieths. Dr. Joseph Clarke has given a table of the comparative weight of male and female children at the full time, from which it appears, that although the greatest proportion of both sexes weigh seven pounds, yet there are more females than males found below, and more males than females above that standard. Thus, whilst out of sixty males, and sixty females, thirty-two of the former, and twenty-five of the latter, weighed seven pounds, there were fourteen females, but only six males, who weighed six pounds. On the other hand, there

were sixteen males, but only eight females, who weighed eight pounds. Taking the average weight of both sexes, it will be found, that twelve males are as heavy as thirteen females. The placenta of a male, weighs, at an average, one pound two ounces and a half, whilst that of a female weighs half an ounce less. Female children, who, at the full time, weigh under five pounds, rarely live; and few males, who even weigh five pounds, thrive. They are generally feeble in their actions, and die in a short time.

When there are two children in utero, the weight of each individual is generally less than that of the fœtus, who has no companion; but their united weight is greater. When a woman has twins, it either usually happens, that both children are small, or one is of a moderate size, and the other is diminutive; though I have known instances, where both the children were rather above, than under the usual standard. The average weight of twelve twins, examined by Dr. Clarke, was eleven pounds the pair, or five and a half each. Twins require more pabulum from the mother, and a greater degree of action in the uterus; for two placentæ must have their functions supported. The uterus is also generally more distended, and produces greater irritation; it has more blood circulating in it; and the weight of its contents, to that with a single child, has been stated as twenty to fifteen. Twin gestation often produces a greater effect on the system, making the women more disposed to disease, and less able to bear it: hence the chance of recovery has been supposed to be four times less in them, than in those who have single children. The children, being generally feebler than when only one is contained in the uterus, are more disposed to disease; and, as the mother is less able to suckle children after a twin labour, many perish, who might have been preserved, by providing a good and careful nurse, soon after birth, for the weakest child.

When the number of children increases above two, the aggregate weight does not increase. Thus Dr. Hull of Manchester met with a delivery of five children, who did not

weigh two pounds and a quarter; they measured from eight to nine inches in length, and two of them were born alive.

Calculations have been made of the proportion of single births, to those where there were a plurality of children. In the Dublin hospital, one woman in fifty-eight had twins. In the British lying-in hospital, one in ninety-one. In the Westminster hospital, one in eighty. In my own practice, about one in ninety-five. In the Dublin hospital, triplets have not occurred above once in five thousand and fifty times. More than three are not met with, once in twenty-thousand times.

The proportion of male children, born in single births, is greater than of females. In an extensive parish in this place, the number of males, born in a given time, was to that of females, as 3716 to 3177. In the Westminster hospital, it was as 972 to 951; but in the same hospital, it is worthy of remark, that the number of male twins was only 16, whilst that of females was 30.

SECTION SEVENTH.

The fœtus has many peculiarities which distinguish it from the adult, and which are lost after birth, or gradually removed during gestation. In particular, the liver is of great size, by which the abdomen is rendered more prominent than the thorax. It appears very early, and increases rapidly till the fourth month, after which its growth is slower. In the child, after birth, the greatest quantity of blood in the liver is venous, and from this the bile seems to be secreted. But in the fœtus, the blood is more nearly approaching in its nature to arterial; and no bile, but a fluid different in its properties, is secreted. The gall bladder is filled with a green fluid, which, before birth, becomes darker, with a tinge of blue, but is said not to have a bitter taste. The umbilical vein, which contains blood, changed in the placenta, enters the liver, and sends large branches to the left side; the vena portæ enters the liver, and ramifies on the right side; whilst a branch, or canal of communication, is sent from the umbi-

lical vein to the vena portæ. By this contrivance, the left side is supplied altogether with pure blood from the placenta, and the right side is supplied with a mixture of pure and impure blood, which does not form perfect bile. After birth, as the circulation from the placenta is stopped, the branches of the umbilical vein, which supplied the left side, would be empty, did not the canal, which formerly served to carry a portion of blood from this vein to the vena portæ, now permit this latter vessel to fill the branches in the left side, which henceforth form a part of the vena portæ. The whole liver is thus supplied with blood entirely venous. Bile is formed, and sometimes in very considerable quantity.

The blood of the fœtus differs from that of the adult. It forms a less solid coagulum, for, in place of fibrous matter, it yields a soft tissue almost gelatinous. It is not rendered florid by exposure to air,* and it contains no phosphoric salts. But soon after the fœtus has respired, the colouring matter, exposed to oxygen, acquires the vermilion tint; and salts are formed, particularly the phosphate of lime.

The stomach is smaller in the fœtus, than in the child after birth. The intestines, which, at first, are seen like threads arising from the stomach, are redder, and said to be longer in proportion to the body in the fœtus, than in the child. They are at first uncovered, but, after some time, the abdominal muscles and integuments form a complete inclosure. They contain a soft substance like ointment, of a dark green colour, called meconium.

The testicles of the male, and the ovaria of the female, lie on the psoæ muscles, but, before birth, the former pass into the scrotum. The kidneys are large and lobulated, and the ureters thick. The glandulæ renales are large, and contain a reddish fluid. The bladder is more conical and lengthened out, than in the adult. The lungs are dense and firm, and a large gland, called thymus, is contained in the thorax. The heart is very different from its adult state. In the chick, we

* Bichat made experiments, to ascertain this upon guinea pigs, and always found the foetal blood black. *Anatomie Generale*, tome II. p. 343.

find that there is in the situation of the heart, a single cavity which afterwards corresponds to the left ventricle. At the forty-sixth hour, the ventricle and bulb of the aorta are visible. Then an auricle is formed by the vena cava: this auricle does not adhere directly to the ventricle, until the sixth day, but is connected with it till that time by a short duct, called *canalis auricularis*. In about ninety-six hours the auricle begins to exhibit marks of a division into two cavities, or a right and a left side; and some time afterwards, the right ventricle and lungs are evolved. The structure of the heart, however, is still different from that which obtains after birth; for though the auricles are divided into two cavities, yet these are seen, in the human fœtus, to communicate freely by a vacancy in the septum; and even after this is supplied, it is only with a valve, which allows the blood to pass from the right to the left side. This is the *foramen ovale*, which is shut up after birth. Another peculiarity of the fœtal heart is, that the pulmonary artery, although it divide into two branches for the lungs, yet sends a third, and still larger branch, directly into the aorta, just at its curvature, and this is the *ductus arteriosus*. The blood is received in a purified state from the placenta, by the umbilical vein, which, after giving off branches in the liver, sends forward the continuation of the trunk, to terminate in the vena cava, or largest of the hepatic veins, and this continuation is named *ductus venosus*. The mixed blood, which is thus found in the vena cava, is carried to the right auricle, and thence to the corresponding ventricle. By the pulmonary artery it ought to be conveyed to the lungs, but this would be useless in the fœtus, and therefore the greatest part of it passes on by the *ductus arteriosus* to the aorta. But it follows from this, that as little blood is carried to the lungs, so little can be brought from them by the pulmonary veins to the left auricle. Now, to obviate this, and fill that auricle at the same time with the right, the *foramen ovale* is formed; and thus, as the blood can pass freely from the right to the left, the two auricles are to be considered as one cavity, being filled and emptied at the same time.

The aorta is distributed to the different parts of the body, but this singularity prevails, that the hypogastric vessels run up all the way to the navel, and pass out to form the umbilical arteries. After birth, these arteries are obliterated in their course to the navel; and the foramen ovale, and ductus arteriosus, become impervious.

The head of the fœtus is, at first, membranous, and the brain a pulp, soluble in aqua kali puri. By degrees, distinct cartilaginous plates are formed over the brain, which are gradually converted into bones. These, at birth, are only united by intermediate membranes.

The pupil of the eye, till the seventh month, is shut up by a membrane; and the eye-lids, for some months, adhere together.

The skin is covered with a white substance, which, in its nature, resembles *gras des cimetières*.

The male fœtus differs from the female, in having the head larger, but less rounded, and flatter at the back part. The thorax is longer, and more prominent, and formed of stronger ribs, than in the female. In her, it is wider from the upper part to the fourth rib, and narrower below; the belly, also, in the female, is more prominent, and the symphysis pubis projects more. The upper extremities are shorter than those in the male; the thighs are thicker at the top, and more tapering to the knees. Dr. Soemmering says, that the spinous processes of the lower dorsal, and upper lumbar vertebræ, make in the male, an eminence like a yoke, in the female a sinuosity. I may remark, that, as the clitoris is large in the young fœtus, females sometimes pass in abortions for males.

When in utero, the fœtus assumes that posture which occupies least room. The trunk is bent a little forward, the chin is pushed down on the breast, the knees are drawn up close to the belly, and the legs are laid along the back part of the thighs, with the feet crossing each other. The arms are thrown into the vacant space betwixt the head and knees. This is the general position and the child thus forms an oval figure, of which the head makes one end, and the breech the

other. One side of it is formed by the spine and back part of the head and neck, and the other by the face and contracted extremities. The long axis of this ellipse measures, at the full time, about ten inches, and the short one five or six. In the eighth month, the long axis measures about eight inches. In the sixth, betwixt four and five. In the fourth month, it measures nearly three inches and a half; and in the third, about an inch less. In the early months, however, there is no regular oval formed, and these measurements are taken from the head to the breech, which afterwards form the ends of the distinct ellipse. The extremities are at first small and slender, and bend loosely toward the trunk.

SECTION EIGHTH.

The umbilical cord is an essential part of the ovum, connecting the fœtus to its involucra. It is found in oviparous and viviparous animals, and also in plants; but in these different classes, it appears with many modifications. In the human subject, it consists of three vessels; of which two are arteries, and one is a vein. These are imbedded in gluten, and covered with a double membranous coat. The two arteries are continuations of the arteriæ hypogastricæ of the child, and passing out at the navel, run in distinct and unconnected trunks, until they reach the placenta, where they ramify and dip down into its substance. When they reach the placenta, the one artery, in some cases, sends across a branch to communicate with the other. The vein commences in the substance of the placenta, forms numerous rays on its surface corresponding to the branches of the arteries; and, near the spot where the arteries begin to give off branches, these rays unite into a single trunk, the area of which is rather more than that of the two arteries. None of these vessels are furnished with valves.

The umbilical vessels run in a spiral direction, within the covering of the cord, and the twist is generally from right to left. Besides this twisting, we also find, that the vessels, especially the arteries, form very frequently coils, loosely lodged in the gluten.

The cord does not consist entirely of vessels, but partly of a tenacious transparent gluten, which is contained in a cellular structure; and these numerous cells, together with the vessels, are covered with a sheath, formed by the reflection of both chorion and amnion from the placenta, and of necessity, the amnion forms the outer coat of the cord. The chorion adheres firmly to the chord every where, but the amnion does not adhere to the chorion; it is not even in contact with it at the placental extremity, but forms there a slight expansion, which from its shape, has been called by Albinus, the *processus infundibuliformis*.

The proportion of gluten is larger in the early than in the advanced stage of gestation, and the vessels, at first, run through it in straight lines. In some instances, the cells distend or augment in number, so as to form tumours on the cord, which hang from it like a dog's ear.

There is a small sac, or bladder, found on the placenta, at or near the extremity of the cord, in the early part of gestation. It is most distinct betwixt the third and fourth month of pregnancy, and is placed exterior to the amnion. It is filled, though not quite distended, with a whitish fluid, on which account, it is called the *vesicula alba*.* From this, a very fine vessel proceeds along the cord, adhering firmly to the amnion; but, without a glass, it cannot be traced all the way to the navel. It has been supposed to be subservient to the nourishment of the fœtus in its early stage.

Besides the blood vessels, there is in brutes another vessel, which is a continuation of the *fundus vesicæ*. It passes out at the navel, and, running along the cord, terminates in a bag, which is placed betwixt the chorion and amnion. The bag is called the *allantois*, and the duct the *urachus*. In the human subject, in place of the *urachus*, we find only a small white impervious cord. There is of course no *allantois*.

When the ovum is first visible in the uterus, there is no cord, the embryo adhering directly to the *involucra*, but it

* Vide Albinus, Annot. Acad. lib. I. cap. xix. p. 74, et tab. I. fig. 12.

soon recedes; and about the sixth week, a cord of communication is perceptible.

The cord, at the full time, varies in length, from six inches* to four feet;† but its usual length is two feet. When it is too long, it is often twisted round the neck or body of the child, or occasionally has knots formed on it,‡ most frequently, perhaps, by the child passing through a coil of it during labour.||

The vessels of the cord sometimes become varicose, and form very considerable tumours. These, occasionally, so far impede the circulation, as to interfere with the growth of the child, or even to destroy it altogether. Sometimes the vessels burst, and blood is poured into the uterus, which produces a feeling of distension, and excites pain. There can, however, be no certainty of this accident having taken place, until the membranes burst, when clots of blood are discharged. If the foetal and maternal vessels should communicate, the mother is weakened, and may even faint; and, in every instance, the child suffers, but does not always die.* Delivery must be resorted to, either on account of the effects produced on the mother, or to prevent the destruction of the child.

The cord may, by a fall, or violent concussion of the body, be torn at a very early period of gestation. In this case, the child dies, but is not always immediately expelled. It may be retained for several weeks; afterwards the ovum is thrown off, like a confused mass, inclosing a foetus, corresponding in size to the period when the accident happened.† The cord may be filled with hydatids.

The cord has been found unusually small and delicate, or

* Hildanus, cent. II. obs. 50.

† Mauriceau has seen it a Paris ell and a third, obs. 401,—Hebenstreit, 40 inches. Haller Disp. Anat. tom. V. p. 675.—Wrisberg, 48 inches.—Vide Com. Gotting. tom. IV. p. 60.

‡ Vide Mauriceau, obs. 133. and 567.

|| Dr. Hunter thinks he has twice seen these formed, previous to birth.

* Vide Baudelocque l'Art, note to section 1084.

† Vide Case by M. Anel, in Mem. of Acad. of Sciences, 1714.

on the contrary, very thick. In the latter case, it is always proper to apply two ligatures, instead of one, on the portion which remains attached to the child.‡ It has happened, that, by the shrinking of the cord under the ligature, the child has died from hemorrhage.¶

Two cords have been met with, connected with one placenta, or with two placentæ belonging to one child. In other instances, the vessels are supernumerary or deficient. Stories have been told of the cord being altogether wanting, but these are incompatible with the fœtal œconomy.

SECTION NINTH.

A placenta, or something equivalent to it, is to be found connected with the young of every living creature.

We find it requisite that a pabulum should be supplied to every animal, and that certain changes should be performed on the blood, qualifying it for supporting life. In oviparous animals, two different parts of the ovum perform these separate functions. The umbilical vessels of the chick ramify on the membrane of the albumen, and thus come in contact with the air, which is absorbed through the pores of the shell; and, by this contrivance, changes analogous to those effected by respiration, are produced on the blood. From the inner surface of the membrane of the vitellus, a nourishing fluid is absorbed which is conveyed to the intestine by a proper duct; and, before the chick is hatched, the remainder of this fluid, inclosed in the membrane of the vitellus, is taken within the abdomen, and covered with the abdominal integuments. (1)

‡ This was proposed by Mauriceau, in consequence of meeting with an instance, where the child suffered much from loss of blood, obs. 256.

¶ Vide case by M. Degland, in *Recueil Period.* tome V. p. 345.

(1) In the eggs of fowls, we observe the following circumstances. 1st. Upon removing the porous shell, we find the albumen inclosed in a membrane, consisting of two layers, and called sacciform by Leviellé. These are separated from each other at the large end of the shell, so as to form a small sac, called the *folliculus aeris*. The albumen is divided into three strata; the first, or cortical, is most liquid; the second, or middle, is more abundant, and thicker than the first, but less so than the third or central.

In many quadrupeds we find, that, after impregnation, certain portions of the inner surface of the uterus enlarge

The middle and central strata are inclosed in a delicate membrane, called *lencilyme* by *Leviellé*, which separates them from the cortical. 2d. Within the albumen we have the vitellus or yolk, which is inclosed in a vascular membrane, called *chlorilyme*, or *membrana vitelli*, which again is enveloped by a membrane common to it, and the intestines of the chick, called *entero-chlorilyme*. 3d. To each end of the vitellus, we have connected a portion of the central albumen, called *chalaza*; and in each of these a membranous substance is discovered, attached to the membrane of the vitellus, and a vascular structure, which can absorb the albumen into the vitellus, to contribute to the nutrition of the chick. 4th. Upon the vitellus, we observe the *cicatricula*, or small sac, called by *Harvey* the eye of the egg, and which was supposed to contain the *fœtus*, the rudiments of which are allowed by *Malpighi*, *Haller*, and *Spallanzani*, to be pre-existent to fecundation. This *cicatricula* was considered as analogous to the amnion, and supposed to contain a transparent fluid, called by *Harvey* *colliquamentum candidum*, or *liquor amnii*. More modern observations ascertain that the embryo is not formed in the *cicatricula*, but very near it on the vitellus, and that the amnion inclosing it, can at first scarcely be distinguished from the embryo. The *cicatricula* soon disappears. *Harvey's* account must therefore be transferred to amnion. 5th. During incubation, the vitellus becomes specifically lighter than the albumen, and rises toward the *folliculus aeris*. Two arteries and two veins go from the *mesenteric* and *hypogastric* vessels of the *fœtus*, to the membrane of the yolk, and are supposed to absorb the vitellus, which therefore is carried to the *vena portæ* of the chick, and nourishes the *fœtus*. There is also a connexion betwixt the intestines and vitelline membrane, by means of a ligamentous substance, which was supposed by *Haller* and *Vicq. D'Azyr* to be a tube, and called *vitello-intestinal canal*, for it is said that air has been passed through it. It was supposed to absorb the yolk, by many villi on the inner surface of the vitelline membrane; but these are said by *Leviellé*, not to be vessels, but soft lamellated plates. At the end of the second day, red blood is observed on the *membrana vitelli*. A series of dots are formed, which are converted first into grooves, and then into vessels, which go to the *fœtus*. This appearance has been called *figura venosa*, and the marginal vessel *vena terminalis*. 6th. The *vitello-intestinal ligament*, and these vessels, form an *umbilical cord*. But besides these, we find, after the fourth day, a vascular membrane at the *umbilicus*, called *membrana umbilicalis*, which rapidly increases, and comes presently to cover the inner surface of the membrane of the shell. It is the *chorion*, and has numerous vessels ramifying on it, like the *chorion* of the sow, and connected in like manner with the *fœtus*. The blood of the *umbilical artery* is dark coloured, that of the vein, bright. 7th. As incubation advances, the amnion enlarges, and comes in contact every where

and form protuberances, having many hollows or foramina, from which a milky fluid can be squeezed. From the cho-

with the chorion. The albumen is all consumed, being taken into the vitellus, which is in a great measure absorbed; and what remains is taken, together with the sac, into the abdomen of the chick, and the parietes close over it. On the 21st day, the chick breaks the shell and escapes. By increasing or diminishing the temperature within a certain extent, the process may be somewhat accelerated or retarded. The eggs of large birds require a longer time to be hatched; those of the ostrich, for example, take six weeks.

Hence it appears, that the vitellus and albumen contribute to the increment of the fœtus, whilst the exterior membrane acts as lungs, the air being transmitted through the pores of the shell.

The eggs of fishes have a general resemblance to those of fowls, and consist of a vitellus and albumen, with their membranes; but in place of being furnished with a shell, they have a tough, or sometimes a horny covering, and some, as those of the shark, torpedo, &c. are quadrangular in shape. The yolk is connected to the intestines of the fœtus, and its membrane is very vascular. As in fowls, so in fishes, it is ultimately inclosed within the abdomen of the young. In the skate, numerous blood-vessels are formed in the albumen, which supply the place of gills, and are supposed by Dr. Monro to be afterwards covered and converted into gills. The two functions of a placenta, then, are still more distinctly fulfilled here than even in fowls, for the apparatus for nutrition and respiration has different or distinct terminations; whereas in fowls and quadrupeds, all the vessels enter at one place. A similar fact is observed in the ova of frogs, for the umbilical cord in the tadpole goes to the head.

The egg of the serpent is nearly the same with that of the fish, and is inclosed in a flexible membrane. The fœtus is coiled up spirally within it, and the chorion is vascular, as in the egg of the fowl.

The adder is a viviparous animal, its uterus is membranous, and divided into eight or nine cells, each of which, in September, contains an ovum as large as a chesnut. This consists of an exterior membrane, which incloses a fœtus about six inches long, and coiled up. About an inch from the tail, the umbilical cord passes out, which consists of vessels that go to ramify on the exterior membrane, which resembles the chorion of the sow. There is also a connexion with a vitellus, which is as large as a hazel nut.

The coluber natrix is said, by Valmont-Bomare, to have a placenta and cord within the egg, but this is contrary to the general structure of eggs; most likely the chorion has been taken for the placenta. The eggs of reptiles are often deposited in packets, the eggs being glued together.

The egg of the turtle is as large as a hen's, and is inclosed in a covering like parchment. It is deposited in the sand, and is hatched in about 24 days. The egg of the alligator is similar in structure to that of the tur-

tion, corresponding vascular efflorescences arise, which shoot into these apertures; and thus a union is effected betwixt the mother and fœtus.

tle; it is rather larger than a goose's egg, and covered with a thick skin, so transparent, however, that the fœtus may be seen through it.

Those animals which are called oviparous hatch their eggs out of the body, either by sitting on them as we see in fowls, or by exposing them to the heat of the sun; as the turtle, crocodile, and many serpents. Oviparous fishes, which comprehend all those called osseous, expel their ova into the water, where they are fecundated by the male, but without copulation. Many fishes leave the sea, and come up the rivers to spawn. Others remain in the ocean; and the eggs, specifically lighter than the water, float on the surface. Many fishes attach them to marine plants, and in some cases the ova are fixed to the body of the parent. The ova are covered with a kind of mucus, which has been supposed to defend them from the water.

The ova of frogs, &c. are likewise fecundated and hatched out of the body. They are enveloped in a glary matter, which perhaps contributes to their increase, for during incubation, the egg both enlarges and changes its shape.

Those animals which hatch their eggs within the body are called ovoviviparous, such as cartilaginous fishes, as the shark, skate, torpedo, &c. The scorpion and venomous serpents also belong to this class. Ovoviviparous animals expel the young fully formed, and therefore have been sometimes considered as having uteri like quadrupeds, and a cord attached directly to it. Spallanzani at first supposed that the fœtus of the torpedo was attached directly to the uterus, but afterwards found that it was contained in a distinct ovum. Experiences, p. 294. See also Cuvier Leçons d'Anat. Comparée, tom. V. p. 142. The shark is said to have an uterus like the bitch, and Belon says he saw a female delivered of eleven young, attached by a cord. Its mode of gestation most likely is similar to the torpedo. This class expel their young often very quickly. A female syngnatus hyppocampus was observed to expel at least a hundred in a very short time.

Analogous to ovo-viviparous animals, are those which receive the ova into cells on the surface of the body, where they are hatched. This is well seen in the pipa, a species of toad. Even the tadpoles are said to be metamorphosed in these cells. The opossum tribe has a modification of this gestation; for in them the fœtus, when very small, is expelled into a bag situated on the belly, and immediately attaches itself to a nipple. The utero gestation of the opossum of North America lasts only from 20 to 26 days, and the embryo when expelled does not exceed a grain. It remains in the sac about 50 days, and acquires the size of a mouse. In other animals, as for instance the bat, the young after birth attach themselves to the nipple, partly for the convenience of being transported or carried about.

In the sow and the mare there is no projection from the uterus, but its surface is every where smooth and vascular. There is no efflorescence from the chorion, but it has numerous vessels disposed over it, which are the extremities of the umbilical arteries and veins. In these animals, then, we have no distinct placenta, the chorion alone serving that purpose.

In plants, we find likewise a placenta or structure, intended for the nourishment and respiration of the fœtus. To take the kidney bean for an example, we find within the membranous covering two parenchymatous lobes, or cotyledons; and at the margin betwixt these, there is the corculum or cicatricula. During incubation, we find that this sends up a small shoot called the plumula, and down a radical into the earth. But to support the plant until the root and leaves are capable of maintaining it, we find the cotyledons rise up out of the earth, on each side of the plumula, forming what are called seed leaves. These both serve for the respiratory organs, and also supply pabulum, which is absorbed by proper vessels, and in consequence thereof they presently are destroyed. When there are more lobes than two in the seed, there are a corresponding number of seed leaves. In many cases these cotyledons do not rise out of the ground, but the plumula alone appears. This is the case with the garden pea, but the cotyledons still perform their functions below the ground, and exist until the foliage of the plant, or adult organs, be formed. The greatest part, then, of a vegetable seed or ovum, consists, like the eggs of fowls, of an apparatus intended for the nutriment and respiration of the fœtus, whilst the embryo itself is very small. The cotyledons consist, in many cases, of a farinaceous substance. In other seeds it is oily and farinaceous, and in some is almost all oily.

Vegetable ova sometimes are contained in a dry pericarpium, and are shed into the earth when it bursts. But others have an apparatus provided, not only for their present growth, but also for accelerating their incubation in the earth. In stone fruit and nuts, we find that vessels pierce the shell at the bottom, and pass on toward the top, and reach the kernel or lobes, which are contained within the shell, enveloped in a soft membrane. They are inserted very near the embryo. Now, for the farther support of these parts, we find that stone fruits are covered with a quantity of nutritious matter. The almond, for example, has its ligneous nut covered with a fleshy substance about an inch thick, inclosed in a proper membrane. The rhamnus lotus has the stone surrounded with farinaceous matter, which tastes like gingerbread. Other seeds are contained in a parenchymatous or succulent substance, as the apple or pear, or in a firm white substance like cream or marrow, or in a mucilaginous matter as the gooseberry, or in an organized pulp as the orange and garcinia mangostana. Some are deposited in a luscious fluid at first, which ultimately becomes farinaceous, as the plantain.

The cetaceæ have uteri like quadrupeds, but I am unacquainted with the precise mode of connexion betwixt the mother and the fœtus.

The monkey differs from other quadrupeds, in having no permanent papillæ; but the maternal part of the placenta is deciduous, like that of women.

In the human subject, the placenta is a flat circular substance, about a span in diameter, and, when uninjected, an inch in thickness. It becomes gradually thinner from the centre to the circumference, by which it ends less abruptly in the membranes. Its common shape is circular; but it is sometimes oblong, or divided into different portions.

The umbilical cord may be fixed into any part of the placenta, or sometimes into the membranes, at a distance from the placenta. When this happens, the vessels run in distinct branches to the placenta, without forming any spongy substance on the membranes. Most frequently, however, the cord is inserted at a point about half way between the centre and the circumference of the placenta. From this the umbilical vessels spread out, like a fan, ramifying over the surface, and dipping their extremities into the substance of the placenta itself.

That surface of the placenta which is attached to the uterus, is divided into lobes, with slight sulci between them, and is covered with a layer of the decidua, like clotted blood. On the surface which is next the child, we see the eminent branches of the umbilical vessels, over which we find spread the chorion and amnion.

If we inject, from the umbilical vessels of the human fœtus, we find, that the placenta is rendered turgid, and vessels are to be found filled in every part of it; but always between their ramifications, there remains an uninjected substance. Even the uterine surface of the placenta is not injected, for the fœtal vessels do not pass all the way to that surface.

If we inject from the uterine arteries, we, in like manner, render the placenta turgid, but nothing passes into the umbilical vessels; and, when we cut into the placenta, we find cells full of injection, and covered with a fibrous uninjected mat-

ter. Hence we may infer, that the placenta consists uniformly of two portions. The one is furnished by the deciduous coat of the uterus, the other by the vessels of the chorion; and these two portions may, during the first three months, be separated, by maceration, from each other.

The structure of the fœtal portion, so far as we know, appears to be similar to that of the pulmonary vessels, the artery terminating in the vein. But the other portion is somewhat different: there is not a direct anastomosis, but the artery opens into a cell, and the vein begins from this cell; for, by throwing in wax by the uterine artery, we may frequently inject the veins. These cells communicate freely with each other in every part of the placenta, and may be compared to the corpora cavernosa penis.

From the general principles of physiology, as well as from experiments on the chick in ovo, it is allowable to infer, that the placenta serves to produce a change on the blood of the fœtus, analogous to that which the blood of the adult undergoes in the lungs; and from considering, that the fœtus itself cannot create materials for its own growth and support, we may farther infer, that the placenta is the source of nutrition also.

The placenta may be formed at any part of the uterus, but, in general, it is found attached near the fundus.

Its structure is sometimes changed, part of it being ossified or indurated, or on the contrary unusually soft. These changes may produce either hemorrhage, or retention of the placenta. Hydatids may form in the placenta; or fleshy tumours may grow in its substance. In neither of these cases does the child necessarily die.

SECTION TENTH.

The ovum, when it descends into the uterus, consists of two membranes, one within the other. These inclose the embryo, and contain a quantity of fluid.

The innermost membrane, or amnion, is thin, pellucid, and totally without the appearance of either vessels or regular fibres; yet, in the end of pregnancy, it is stronger than

all the rest taken together: it lines the chorion, covers the placenta, and mounts up on the navel string, affording a coat to it all the way to the umbilicus, where it terminates.

The sac formed by the amnion is filled with a fluid, which appears to be composed chiefly of water, with a very little earth, mucus, and saline matter. As this water is contained within the amnion, it has received the name of liquor amnii.

The quantity of water, upon an average, which is contained within the amnion, at the full time, is about two English pints; but sometimes it is much more, and at other times scarcely six ounces. In the early periods, the quantity is larger, in proportion to the size of the uterus, than afterwards.

The chorion, like the amnion, is thin and transparent, adheres firmly to the placenta, and covers all the vessels which run on its surface; but it does not dip down with them into the substance of the placenta. When the ovum first descends, the chorion is every where covered with vessels, which sprout out from it. These form a covering to it, which, from its appearance, has been called the shaggy or spongy chorion.

SECTION ELEVENTH.

The last coat to be described, is one yielded entirely by the uterus, and serves to connect the uterus with the fetal vessels of the chorion together. This, as Harvey observes, is not a covering of the fœtus, but a lining of the uterus, which falls off after delivery; and therefore it is called the caducous coat, or the membrana decidua.

The illustrious Haller supposed, that this was formed by naked vessels shooting out from the uterus. Dr. Hunter imagined, that the arteries of the uterus poured out coagulable lymph, which was afterwards changed into decidua. His brother, Mr. John Hunter, attributed its origin to coagulated blood, which formed a pulpy substance on the inner surface of the uterus.

Having been so fortunate as to meet with three or four opportunities of investigating the state of the uterus, within a month after conception, I shall describe what appears to

me to be the structure of the decidua. Very speedily after impregnation, and always before the embryo enters into the womb, its size is increased, its fibres are softer and more separated from each other, and its vessels very much enlarged. On cutting it up, its cavity is found to be considerably broader and longer, and somewhat wider, than in the unimpregnated state; and all the fundus and body have their surface covered with a dense coat, which adheres firmly to the uterus. If the vessels have been injected, this evidently is seen to consist of two different substances, namely vessels, and a firm tough gelatine. It seldom happens that all the vessels can be equally filled, and therefore some spots are redder than others. The vessels do not pass on to the surface of this coat, but are seen shining through it. They proceed directly from the surface of the womb, and project at right angles to the plane which yields them; they are intermixed with a little gelatine, and consist of both arteries and veins. Over their extremities is spread a layer of gelatinous matter, which very early is observed to contain fibres, forming a kind of net-work. Thus the decidua consists of two layers, one highly vascular, proceeding directly from the uterus: the other, which is most probably formed by these vessels, is more fibrous and gelatinous; and when this is removed, the primary vessels, or outer layer, may be seen like a fine efflorescence, covering the surface of the uterus. In some cases the decidua extends a little into the fallopian tubes; in other instances it does not. In no case does the cervix form decidua. It is only produced by the fundus and body of the womb; and immediately above the cervix, the decidua stretches across, so as to form a circumscribed bag within the uterus. In some instances, however, I have observed this continuation to be wanting, although the parts were opened with care. In all other circumstances, these uteri resembled those where the decidua was continued across; but perhaps, notwithstanding this, there may have been a difference of two or three days in the period of impregnation, occasioning this variation. In every case, the decidua,

consisting thus of two layers, is completely formed before the ovum descends.

When the embryo passes down through the tube, it is stopped, when it reaches the uterus, by the inner layer, which goes across the aperture of the tube, and thus would be prevented from falling into the cavity of the uterus, even were it quite loose and unattached. By the growth of the embryo, and the enlargement of the membranes, this layer is distended, and made to encroach upon the cavity of the uterus, or more correctly speaking, it grows with the ovum. This distension or growth gradually increases, until at last the whole of the cavity of the uterus is filled up, and the protruded portion of the inner layer of the decidua comes in contact with that portion of itself which remains attached to the outer layer. We find then, that the inner layer is turned down and covers the chorion; from which circumstance, it has been called the reflected decidua.

Thus we see, that whenever the ovum descends, it is encircled by a vascular covering from the uterus, which unites, in every point, with those shaggy vessels which sprouted from the chorion, and which made what was called the spongy chorion. One part of these vessels forms placenta, and the rest gradually disappear, leaving the chorion covered by the decidua reflexa. This obliteration begins first at the under part of the chorion.

CHAPTER XVI.

Of Sterility.

STERILITY depends either on malformation, or imperfect action of the organs of generation. In some instances the ovaria are wanting, or too small; or the tubes are imperforated; or the uterus very small. In these cases the menses generally do not appear, the breasts are flat, the external organs small, or they partake of the male structure, and the sexual desire is inconsiderable.

In a great majority of instances, however, the organs of generation seem to be well formed, but their action is imperfect or disordered. The menses are either obstructed or sparing, or they are profuse or too frequent, and the causes of these morbid conditions have been already noticed.

It is extremely rare for a woman to conceive, who does not menstruate regularly; and on the contrary, correct menstruation generally indicates a capability of impregnation on the part of the woman.

A state of weakness and exhaustion of the uterine system, occasioned by frequent and promiscuous intercourse with the other sex, is another very common cause of barrenness in women, and hence few prostitutes conceive.

A morbid state of the uterus and ovaria, often accompanied with fluor albus, may likewise be ranked amongst the causes of sterility, and this is known by its proper characters.

When sterility depends upon organic disease, we have it seldom in our power to remove it; but when there is no mark of the existence of such a state, and we have ground to suppose that it is occasioned by debility, or imperfect action of the uterine system, we are to employ such means as have been pointed out in considering the diseased states of menstruation. In many cases, much success attends the tonic plan of treatment, particularly the use of the cold bath, and chalybeate medicines. A temporary separation from the husband is of service, especially when the menses are profuse, and, in most cases, frequent intercourse should be avoided.

Women who are very corpulent, are often barren, for their corpulence either depends upon want of activity of the ovaria, spayed, or castrated animals generally becoming fat; or it exists as a mark of weakness of the system. In both cases, moderate exercise, and chalybeate water or nitrous acid, may be of service, but it must be confessed, often fail. These remarks are also applicable to women who are of a spare, delicate habit. Should a woman, who has been for some years barren, conceive, she must be very careful during gestation, for abortion is readily excited.

In some cases, the uterine system is capable of being acted on by the semen of one person, but not of another.

CHAPTER XVII.

Of Extra-uterine Pregnancy.

SECTION FIRST.

IT sometimes happens, that the ovum does not pass down into the womb, but is retained in the ovarium, or stops in the tube, or is deposited among the bowels. Of all these species of extra-uterine pregnancy, the tubal is the most frequent.

The symptoms of extra-uterine pregnancy are not, at first, very definite; but generally the usual sympathetic effects of pregnancy, or the diseases of gestation, are more distressing than if the fœtus were contained in utero, nor do they cease so early. In some cases, they even increase in violence, as pregnancy advances.*

The symptoms, though often more violent, are, however, similar in kind, to those of common pregnancy. The belly swells, the uterus itself enlarges, and may be felt to be heavy; but, after some time, it does not correspond in its size, and in the state of its cervix, to the supposed period of ges-

* Vide Paper by Dr. Garthshore, Lond. Med. Journ. vol. VIII. p. 344.

tation. The menses are often obstructed, though in some cases they have continued to appear for two or three months. The breasts enlarge, the morning sickness takes place about the usual period,(1) and the child quickens at the proper time, but it is felt more upon one side than on the other.

Occasionally in the early stage of pregnancy, pains (2) resembling those of colic are felt, and these are often so severe as to excite syncope,(3) or convulsions;* and it has happened, that during these pains, the tube or ovarium has burst, and the person died, owing to the internal hemorrhage. When these pains either do not occur, or are removed, we generally find, that at the end of eight, nine, or ten months from the commencement of gestation, appearances of labour (4) take place; the woman suffers much from pain, and there may be a sanguineous discharge from the uterus. The pains go off

(1) In Dr. Clarke's case, the morning sickness, and other signs of pregnancy, appeared very regularly. At the end of nine months, attempts were made to expel the fœtus. These were followed by inflammation and decline of health. Then suppuration took place, and the patient sunk. Transactions of a Society, &c. vol. II. p. 1. In Mr. Mainwaring's case, in the same work, p. 287, the patient suffered much from morning sickness, and pain at the groins.

(2) In the Journal de Sçavans for 1756, we are told of a woman at Louvain, who at first had so dreadful pain when she went to stool, that she thought her bowels were coming out.—In Pouteau's case, the woman suffered great pain till after the second month. Melanges, p. 333.

(3) Bianchi mentions a case, in which, in the first months, the woman complained of great pain in the lower belly, with nausea and fainting fits. The motion of the child ceased in the fifth month, and then milk was secreted. De Nat. in Hum. Corp. Vitiosa Morbosaque Gener. p. 166.—In Dr. Mounsey's case, the pain, vomiting, and fainting fits, continued till the woman quickened. Phil. Trans. vol. XLV. p. 131.—In Dr. Fern's case, the person complained of great pain till the third month; and from that period till the 8th month, was subject to convulsions and syncope. Phil. Trans. vol. XXI. p. 121.

* Vide Dr. Fern's case, and a case by Mr. Jacob, in Lond. Med. Jour. vol. VIII. p. 147.

(4) In Dr. Perfect's case, no labour pains came on, but the motion of the child ceased at the end of nine months. The abdomen neither increased nor diminished in size for two years and seven weeks; but she was afflicted with constant pains in the hypogastric region, attended with fever, and finally sunk under marasmus. Cases in Midwifery, vol. II. p. 164.

more or less gradually,* the motion of the child ceases, and milk is secreted.† In a few instances, very little farther inconvenience is felt, the tumour of the belly remaining for many years, and the child being converted into a substance resembling the *gras des cimetières*, whilst the sac which contains it becomes indurated. More frequently, however, considerable irritation is produced, (4) inflammatory symptoms supervene, and hectic takes place. The sac adheres to the peritoneum, or intestines; and after an uncertain period, varying from a few months to several years, it either opens externally, or communicates with the abdominal viscera. Very fetid matter, together with putrid flesh, bones, and coagula, are discharged through the abdominal integuments,‡ or by the rectum, (5) vagina, (6) or bladder. (7) Sometimes, even

* In Mr. Bell's case, the pains continued though gradually abating for three weeks. *Med. Comment.* vol. II. p. 72.

† In Mr. Bell's case, milk continued to be secreted for several years. In Mr. Turnbull's case, a fluid was secreted, rather like pus than milk.

(4) In a case of a French mulatto woman, which ultimately terminated fatally, the outlines of which I was favoured with by Dr. Chisholm, the pain was so great, that it could not be allayed by the strongest opiates.

‡ This termination is noticed so long ago as by Albucasis, lib. II. c. 76.

(5) Vide cases by Langius, in his *Epistolæ*, tom. II. p. 670. Tulpus Opera, lib. IV. c. 39. p. 358.—Pouteau in his *Mélanges*, p. 373.—Mr. Shiever, in *Phil. Trans.* No 303, p. 172.—Winthrop, *Phil. Trans.* vol. XLIII. p. 304, and Simon, p. 529.—Lindestâlpe, vol. XLIV. p. 617.—Morley, vol. XIX. p. 486.—Gordon, in *Med. Comment.* vol. XVIII. p. 323.—Cammel, in *Lond. Med. Jour.* vol. V. p. 96.—Case by M. Bergeret, in the *Recueil Periodique*, tom. XIV. p. 289.

(6) Vide Marcel. Donatus, *De Med. Hist. Mirab.* lib. IV. c. 22.—Horstii Opera, tom. II. p. 536. In this case, the fœtus was discharged both by the vagina and rectum.—Benevoli, in his *Dissert.* p. 104, gives an instance where the greater part of the child was expelled by the vagina, but the woman died before the process was completed.—Mr. Smith's case, in *Med. Comment.* vol. V. p. 314.—In Mr. Coleman's case, pains came on, and the head was felt in the pelvis at the time of her reckoning, and long afterwards, but the os uteri could not be perceived. In some time, hectic fever, with diarrhœa and sore mouth, appeared. Six months after her attempts at labour, an opening was felt in the vagina, but very unlike the os uteri. The hand was introduced, and a putrid child was extracted. Some fœces continued to come by the wound, but at last she got well. *Med. and Phys. Jour.* vol. II. p. 262.—See also Camper's case, in his *De-*

an entire fœtus has been brought away from the umbilicus, (8) or by the rectum. (9) It is worthy of notice, that the placenta, in this process, always is ultimately destroyed, (10) and discharged among the putrid fluid. Often, time is not allowed for this process to be accomplished, but the person dies at an early period.

Thus it appears, that there are different terminations of the extra-uterine pregnancy. The sac may burst, and the person die speedily of hemorrhage; (11) or the child may escape into the abdomen, and be inclosed in a kind of cyst of lymph;* or the sac may remain entire, the child being retained many years, (12) and the parts become hard: notwithstanding this,

monst. Anat. Path. lib. II. p. 16; and Dr. Fothergill's case, in Mem. of Med. Society, vol. VI. p. 107.

(7) Vide Stalpart Vander Wiel Opera, tom. I. p. 305. In this case, bones came away with the urine.—In the case of Ronseus, the child was discharged partly by the bladder, but chiefly by the anus. Epist. Med.—A similar instance is related by Morlanne, the extraneous matter forming a nucleus for a calculus. Recueil Period. tom. XIII. p. 70.—In Prof. Josephi's case, the child was found altogether in the bladder. Med. and Phys. Jour. vol. XIV. p. 519.

(8) Vide case of Mrs. Stagg, in Lond. Med. Obs. and Inquiries, vol. II. p. 369; and cases by Mr. Jacob, Dr. Maclarty, and others.

(9) In Mr. Gifford's case, the child was expelled entire by the anus, and even the cord was found hanging out of the intestine. Phil. Trans. vol. XXXVI. p. 435.—See also Mr. Goodsir's case, in Annals of Medicine, vol. VII. p. 412.

(10) In Dr. M'Knight's case, although the cæsarean operation was performed before any bad effects were produced on the health, no part of the placenta could be found.

(11) In Dr. Clarke's case, the tube burst in the second month, and the woman died from the loss of blood. Transactions of a society, vol. I. p. 216.—Vide case by Duvervey, in his Works, tom. II. p. 353; and by M. Littre in the Memoirs of the Acad. of Sciences. for 1702, and by Riolian, in his Works. See also Med. Comment. vol. I. p. 429.—In Mr. T. Blizard's case, rupture took place at a very early period, for the woman had miscarried only five weeks previous to this event. Vide Edin. Phil. Trans. vol. V. p. 189.

* Vide a case by La Croix, in La Med. Eclairée, tome IV. p. 349.

(12) I have known the fœtus retained for twenty years; and there are some instances, where it has been retained thirty, forty, or fifty years. Mrs. Ruff, whose case is related in the Med. and Phys. Jour. for May 1800, carried the child fifty years. Middleton's patient carried it sixteen years. Phil

the menses may return, and the woman conceive again. (13) But the most frequent termination is that of inflammation ending in abscess, attended with fever and pain, under which the patient either sinks, or the fœtus is expelled in pieces, and the cure is slowly accomplished. From a review of cases it appears, that a majority ultimately recover, or get the better of the immediate injury: of the rest, some have sunk speedily, either from hemorrhage or inflammation, or exhaustion produced by ineffectual attempts to expel the child; or more slowly from hectic fever; or in consequence of some other disease being called into action, by the violence which the constitution has sustained.

In some cases, the sac rises quite out of the pelvis. In others, it falls down between the rectum and vagina, forming a tumour, accompanied with symptoms of retroversion (14)

Trans. vol. XLIV. 617.—Mounsay's thirteen years, vol. XLV. p. 121. Steigertahl's forty-six years, vol. XXXI. p. 126. Broomfield's nine years, vol. XLI. p. 696. Sir P. Skippon's patient discharged it by suppuration at the groin, after retaining it twenty years, vol. XXIV. p. 2070.—See also cases by M. Grivel, in *Edin. Med. Jour.* vol. II. p. 19, and Dr. Caldwell, p. 22. Sometimes no attempt is made to expel, but the fœtus is converted into a substance, which Fourcroy finds to resemble the *gras des cimetières*. *System*, tom. X. p. 83.—Sandifort relates a case, where, after attempts at labour, no further inconvenience was sustained, but the child was found after twenty-two years to be indurated. *Observationes*, lib. II. p. 36. He quotes Nebel for a case, where it was retained fifty-four years.—Chessel den found it converted into earthy matter.—The late Mr. Hamilton of this place had a preparation of a fœtus, covered with calcareous matter, which was retained 32 years. This woman had pains at the end of nine months, after which the belly decreased in size.

(13) In the 5th vol. of the *Edin. Med. Essays*, there is related a case, in which the patient seemed to have a second extra-uterine pregnancy before she got quit of the first.—See also *Primrose de Morb. Mul.* p. 326.—Mr. Hope, in the 6th vol. of the *Med. and Phys. Jour.* p. 360, details a case, where the woman in the seventh month of pregnancy had pains, which continued for three weeks, and then went off, leaving a hard tumour on the left side, which was somewhat painful; she then had another pregnancy, and a fortnight after delivery, began, after taking a laxative, to vomit, and continued to do so, ultimately throwing up feculent matter. The case ended fatally.—See also Turk, in *Haller, Disp. Chir.* IV. 793.

(14) In Mr. White's case, related in *Med. Comment.* vol. XX. p. 254, the symptoms were very like those of retroversion, and the case was only

of the uterus; but the urine is not so constantly suppressed, and the os uteri, though pressed to the symphysis, is not so much turned up as in retroversion.* In such cases, the sac inflames, and bursts into the rectum or vagina. Sometimes, when parturient efforts are made, the head descends into the pelvis, though it was not there before; but either no os uteri can be felt, or it is felt directed to the pubis, and it is not affected by the pains.

It is curious to observe, that generally the uterus enlarges somewhat, (15) and in most instances, I imagine, decidua (16) is formed. In a remarkable case, related by the ingenious Mr. Hay† of Leeds, the placenta was formed in the uterus, whilst the fœtus lay in the tube.

distinguished by the result.—In Mr. Cammel's case, there was not only a tumour betwixt the vagina and rectum, but the os uteri was turned upward and forward. Lond. Med. Journal, vol. V. p. 96.—Mr. Kelson's case very much resembled retroversion, for in the tenth week both the urine and stools were obstructed. In about a fortnight, the impediment was suddenly removed, and the uterus felt in situ. She continued well till the ninth month, when labour ineffectually came on; but in process of time, the child was discharged by the anus. Med. and Phys. Jour. vol. XI. p. 293.

* Vide Mr. Mainwarring's case, in Trans. of a Society, &c. Vol. II. p. 287.

(15) Boelmer long ago observed this; and Dr. Baillie, in the 79th vol. of the Phil. Trans. mentions, that Dr. Hunter had a preparation of tubal pregnancy, in which the uterus was found enlarged to double its natural size, and containing decidua. He also states, that in an ovarium case, the uterus was enlarged, thick, and spongy, and its vessels enlarged.—Dr. Clarke found the uterus, in the second month of an extra-uterine pregnancy, exactly of the same size as if the embryo had been lodged within it. The decidua was formed, and the cervix filled with gelatinous matter. Transactions of a Society, vol. I. p. 216.—See also a case by Saviard, in Phil. Trans. No. 222, p. 314.—A case, similar to Dr. Clarke's, is related by Mr. T. Blizard, in the Edin. Phil. Trans. vol. V. p. 189.—See also Annals of Med. vol. III. p. 379.

(16) In Mr. Houston's case, the cervix was so closed up, that it would not admit a probe. Phil. Trans. vol. XXXII. p. 387.—The decidua would appear sometimes to enlarge, and form a mass like placenta, which in Mr. Turnbull's case was expelled with hemorrhage. Mem. of Med. Society, vol. III. p. 176.

† Vide Med. Obs. and Inq. vol. III. p. 341.

Tubal pregnancy sometimes does not proceed farther than the second month, the tube bursting at that time; or to speak more correctly, I believe the tube slowly inflames, and sloughing takes place. In a great majority of instances, however, the tube goes on enlarging for nine months, and acquires a size, nearly equal to that of the gravid uterus, at the same stage of gestation.* The placenta differs from a uterine placenta, in being much thinner and more extended. External examination discovers little difference, at the full time, between this and common pregnancy.

Ovarian (17) is much more rare than tubal pregnancy, and it is seldom that the ovarium acquires a great size. It either bursts early, (18) or inflammation and abscess take place; or the fœtus dies, and is converted into a confused mass; or it excites dropsy of the ovarium. (19) The ovarian pregnancy, until inflammation has taken place, produces a circumscribed movable tumour, like dropsy of the ovarium.

In ventral pregnancy, the most rare of the three species, the motions of the child are felt more freely, and its shape is

* Among many other cases, in proof of this, I may refer to one very accurately detailed by Dr. Clarke, in the *Trans. of a Society*, &c. vol. II. p. 1.

(17) In the case related by Varocquier, the ovarium did not acquire a larger size than an egg. The woman died, after suffering violent pain in the left side, low down. The viscera were slightly inflamed. *Mem. de l'Acad. de Sciences*, tom. CXIII. p. 76.—In the case by L'Eveill , the fœtus was apparently betwixt three and four months old. *Rapport de la Soci t  Philomatique*, tom. I. p. 146.—See also a case in the *Recueil Period.* tom. XIII. p. 63; and in the *Recueil des Actes de la Soci t  de Sant  de Lyon*.

(18) Vide Chambon, *Malad. de la Grossesse*, tom. II. p. 373.—Case by St. Maurice, in *Phil. Trans.* No. 150. p. 285.—In the case related by La Rocque, the ovarium was found ruptured, and the abdomen full of blood. *Journ. de Med.* 1683.—Boehmer found the ovarium ruptured, and the fœtus half expelled. *Obs. Anat. fasc. prim.*—Dr. Forrestier's patient, after violent colic pains, voided blood by the anus. The hemorrhage and fainting fits proved fatal. The fœtus was found in the ovarium. *Annals of Medicine*, vol. III. p. 379.

(19) Vide R derer, *Elemens.* c. 15, § 758.—In Mr. Dumas' case, a fluid like chocolate was drawn off by tapping, which was twice performed. The ovarium contained hair, bones, &c. *La Med. Eclair e*, tom. IV. p. 65.—Mr. Bell's tubal case excited ascites.

readily distinguished through the abdominal integuments. The expulsive efforts come on as usual, and the head of the child is sometimes forced into the pelvis. It dies, and the usual process for its removal is carried on, if the woman do not sink immediately under the irritation. The placenta is found attached to the mesentery or intestines. (20)

SECTION SECOND.

In the treatment of extra-uterine pregnancy, much must depend on the circumstances of the case. In the early stage, if the sac be lodged in the pelvis, we must procure stools, and have the bladder regularly emptied, as in cases of retroverted uterus. Attacks of pain, during the enlargement of the tube, require blood-letting and anodynes, laxatives and fomentations. The same remedies are indicated when convulsions take place. Ovarian requires the same management with tubal pregnancy, except that, if it be complicated with dropsy, relief may be obtained by tapping.

When expulsive efforts are made, and the head is felt through the vagina, and the nature of the case distinctly ascertained, it may be supposed, that much suffering may be avoided, by making an incision through the vagina, and delivering the child; but, as yet, experience has not fully ascertained the utility of this practice.* It has been proposed, in these and other circumstances, to perform the cæsarean

(20) Vide Dr. Kelly's case, in *Med. Obs. and Inquiries*, vol. III. p. 44.—In Mr. Clarke's case, the placenta was attached to the kidneys and intestines. *Mem. of Med. Society*, vol. III. p. 197.—In the *Mem. of the Acad. of Sciences*, there is a case related, where the placenta adhered to the lumbar vertebræ.—In the history by La Coste, it was placed under the stomach and colon. *Vide Oeuvres de Duverney*, tom. II. p. 363.—In Mr. Turnbull's case, it was very thin, and adhered to the intestines. *Mem. of Med. Society*, vol. III. p. 176.—A case of ventral pregnancy, complicated with hernia, is related by M. Martin in the *Recueil des Actes de la Société de Santé de Lyon*.—Courtial found it adhering to the stomach and colon.

* In a case, probably of this kind, related by Laverjat, and quoted by Sabatier, the child was extracted by an incision through the vagina, and the woman recovered. *De la Med. Operat.* tome I. p. 136.

operation,* in the usual manner, upon the accession of labour; but there is not only great danger from the wound, but likewise from the management of the placenta, which, if removed, may cause hemorrhage, especially in ventral pregnancy, and, if left behind, may produce bad effects. The last, however, is the safest practice.

The result of the numerous cases upon record, will certainly justify; to the fullest extent, our trusting to the powers of nature, rather than to the knife of the surgeon. Allaying pain and irritation in the first instance, by blood-letting, anodynes, and fomentations: and avoiding during all the inflammatory stage, stimulants and motion, whilst, by suitable means, we palliate any particular symptom, constitute the sum of our practice.

A tendency to suppuration is to be encouraged by poultices; and the tumour, when it points externally, is either to be opened, or to be left to burst spontaneously, according to the sufferings of the patient, and the exigencies of the case. (21) The passage of the bones, and different parts of

* M. Colomb performed the cæsarean operation, but it ended fatally. *Recueil des Actes de la Societe de Lyon.*

(21) Dr. Maclarty relates the case of a negress, where the breech of the child protruded through an ulcer, at the lower part of the abdominal tumour, and the arm at the upper part of the tumour. The intermediate portion of skin was divided, and the fœtus extracted. The head of the child stuck pretty firmly, but was brought out with the forceps. There was no placenta, but putrid matter was discharged with the child. The woman recovered. *Med. Comment.* vol. XVII. p. 481. Another case is related by Duverney, where the child was extracted from the groin, and this is one of the rare instances where the placenta was not destroyed. It was extracted with the child. *Oeuvres*, tom. II. p. 357.—Cyprianus gives an instance of the child being removed, after having been retained twenty-one months. *Histor. Fetus. Hum. Salva. Matre, ex Tuba. Excisi.*—Mr. Brodie enlarged the navel with a lancet. *Phil. Trans.* vol. XIX. p. 580.—See also M. Baynham's case, in *Med. Facts*, vol. I. p. 73.—In Mr. Bell's case an incision four inches in length was made, and the bones of two children extracted. *Med. Comment.* vol. II. p. 72.—Dr. Haighton relates an interesting case, where some bones were discharged by the vagina, but the tumour also pointed above the pubis, and through this one of the ribs appeared. The practitioner made an incision, but so great hemorrhage came on, that he was obliged to apply a bandage till next day, when

the fœtus, may often be assisted; and the strength is to be supported under the hectic which accompanies the process. After the abscess closes, great care is still necessary, for, by fatigue or exertion, it may be renewed, and prove fatal. (22)

When no process is begun for removing the fœtus, but it is retained and indurated, our practice is confined to the palliation of such particular symptoms as occur.

CHAPTER XVIII.

Of the Signs of Pregnancy.

SOME women feel, immediately after conception, a particular sensation, which apprizes them of their situation, but such instances are not frequent; and, generally, the first circumstances which lead a woman to suppose herself pregnant, are the suppression of the menses, and an irritable or dyspeptic state of the stomach. Soon afterwards the breasts enlarge, and occasionally become painful; the nipple is surrounded with a brown circle or areola; and often, even at an early period, a serous fluid begins to ooze from it. The

he extracted the bones. The woman recovered. Med. Records, p. 260.—Dr. M'Knight performed the operation in the twenty-second month, although the woman enjoyed tolerable health; very dangerous symptoms supervened, but the woman, who certainly was brought into a very hazardous state by the premature operation, did recover. No placenta was found. Mem. of Med. Society, vol. IV. p. 342.

(22) In Dr. Morley's case, this happened two years after the original abscess had healed Phil. Trans. vol. XIX. p. 486.—Mr. Moyle details a history, where the abscess first of all burst, in consequence of leaping over a hedge. Bones continued to be discharged for a year, without much injury to the health. The abscess then healed, but three years afterwards a tumour again appeared, and, in consequence of exertion, burst, when about a yard of intestine protruded. Some days elapsed before Mr. Moyle saw her; the intestine was then gangrenous, but she lived 12 days longer, and the portion was thrown off before death. Med. Jour. vol. VI. p. 52

woman loses her looks, becomes paler, and the under part of the lower eye-lid is of a leaden hue. The features become sharper, and sometimes the whole body begins to be emaciated, whilst the pulse quickens. In many instances, particular sympathies take place, causing salivation, tooth-ach, jaundice, &c. In other cases, very little disturbance is produced, and the woman is not certain of her condition, until the child quickens, which is between the fourth and fifth month of pregnancy.

In the commencement of pregnancy, the abdomen does not become tumid, but, on the contrary, is often rather flatter than formerly; and, when it does first increase in size, it is rather from inflation of the bowels, than from expansion of the uterus. As an increase of bulk, together with many of the other symptoms of gestation, may proceed from suppression of the menses, we cannot positively, from those signs, pronounce a woman to be with child.

When women have any doubt, with regard to their situation, they generally look forward to the end of the fourth month, as a period which can ascertain their condition. For, at this time, or a little sooner or later, in different women, the motion of the child is first perceived, or it is said to quicken; and, in some cases, a few drops of blood flow from the uterus at this period. The motion is first felt in the hypogastrium, and is languid and indistinct, but by degrees it becomes stronger. It is possible for women to mistake the effects of wind for the motion of a child, especially if they have never borne children, and be anxious for a family. But the sensation produced by wind in the bowels is not confined to one spot, but very often is referred to a part of the abdomen, where the motion of the child could not possibly be felt.

Many women suppose, that by examining the blood drawn from the veins, their pregnancy may be ascertained. Very soon after impregnation, the blood becomes sisy; but it differs from the blood of a person affected with inflammation. In the latter case, the surface of the crassamentum is dense, firm, and of a buff colour, and more or less depressed in the

centre. But in pregnancy the surface is not depressed, the coagulum is of a softer texture, of a yellow and more oily appearance. It is not possible, however, to determine positively, from inspecting the blood; for a pregnant woman may have some local disease, giving the blood a truly inflammatory appearance; and, on the other hand, it is possible for suppression of the menses, accompanied with a febrile state, to give the blood the appearance which it has in pregnancy.

Examination of the uterus itself is a more certain mode of ascertaining pregnancy. About the second month of gestation, the uterus may be felt prolapsing lower in the vagina than formerly; its mouth is not directed so much forward as before impregnation; it is shut up, and the cervix is felt to be thicker, or increased in circumference. When raised on the finger, it is found to be heavier, or more resisting. Some have advised, that the os uteri should be raised upward and forward, so as to retrovert the womb, in order that its body may be felt, but this is not expedient. Examination, at this period, is liable to uncertainty, because the uterus of one woman is naturally different in magnitude from that of another. But in the third month we can arrive at tolerable certainty, the womb being then felt decidedly to be heavier, and more easily balanced on the finger. In the fourth month it is found to be higher than when unimpregnated: a kind of fluctuation may be perceived, and, by placing a hand on the lower part of the belly, so as to press on the fundus of the womb, it can be made to give more resistance to the finger applied per vaginam, and may by it be rolled about. After quickening, if we pat with the finger on the cervix uteri, we can generally make the child strike gently, so as to be felt. About this time, and still more distinctly afterwards, we can, if the abdominal muscles be relaxed, feel the uterus extending up from the symphysis pubis, and in proportion as pregnancy advances, can more readily distinguish the members of the child, and feel its jerks or motions. Examination, per vaginam, informs us of those changes which take place on the cervix and os uteri, which were noticed in a former chapter.

CHAPTER XIX.

Of the Diseases of Pregnant Women.

SECTION FIRST.

PREGNANCY produces an effect on the general system, marked often by a degree of fever, and always by an altered state of the blood. This state is the consequence of local increased action, which irritates and excites the system, in the same way as when an organ is inflamed. The gravid uterus, also, has an effect by sympathy, on other organs or viscera; and likewise produces changes in them, mechanically, by its bulk and pressure.

The effects of pregnancy vary much, both in degree, and in the nature and combination of the symptoms, according to the constitution of the woman, and the natural or acquired irritability of different organs. In some cases, a very salutary change is produced on the whole system, so that the person enjoys better health during pregnancy, than at other times. But in most instances, some troublesome or inconvenient symptoms are excited, which are called the diseases of pregnancy. As these proceed from the state of the uterus, it follows, that when they exist in a moderate degree, they neither admit of, nor require any attempts to cure them; for their removal implies a stoppage of the action of gestation, which is their cause. But when any of the effects are carried to a troublesome extent, then we are applied to, and may palliate, though we cannot take them away. This palliation we procure, by diminishing the febrile or irritated state of the system, when it exists, by suitable means, and then treating the individual symptoms according to the general principles of medicine.

There is a great diversity, both in the effects of pregnancy, and also in the period at which these manifest themselves; for whilst some begin to suffer very early from the irritation of the uterus, and are much relieved from the effects thereof after the child quickens, others feel very lit-

the inconvenience till towards the end of pregnancy, or the last quarter, when the womb is greatly enlarged, and the abdominal viscera disturbed.

SECTION SECOND.

In many cases, the pulse becomes somewhat quicker soon after impregnation, and the heat of the skin is at the same time a little increased, especially in the evenings. In the later months of pregnancy, the febrile symptoms often are extremely troublesome; the pulse is permanently frequent, but in the evenings it is more accelerated, whilst the skin becomes hot, and the woman restless; she cannot sleep, but tosses about till daybreak, when she procures short but unrefreshing slumber, occasionally accompanied with a partial perspiration. In the morning, the febrile symptoms are found to have subsided; but in the afternoon they return, and the following nights are spent alike uncomfortably.

This state is attended with more emaciation, and greater sharpness of the features, than is met with in pregnancy, under different circumstances; but it is wonderful how well the strength is kept up in spite of the want of rest, and the uneasiness which is produced, from this disease being sometimes conjoined with intolerable heat about the parts of gestation.

In slight degrees of this febrile state all that is necessary is to keep the bowels open, and take away a little blood. But when it becomes urgent towards the last months of gestation, we are under the necessity of taking away blood more frequently, but not in great quantity at a time. The saline julap is of service, by keeping up a gentle moisture. The bowels are to be kept open by a mild laxative, such as cream of tartar, if the person be not much distressed with heartburn; and in the same circumstance, the sulphuric acid is a very good internal medicine. The restlessness is best allayed by sleeping with few bed-clothes; and sometimes great relief is obtained, by dipping the hands in water, or grasping a wet sponge. Opiates very seldom give relief, and ought not to be pushed far, as they make the woman more uncomfort-

able, and are supposed even to injure the child. Frequently nothing does much good, the state continuing until the woman is delivered.

There is a species of fever, which may affect women about the middle of pregnancy, and makes its attack suddenly, like a paroxysm of ague. It soon puts on an appearance rather of hectic, combined with hysterical symptoms. The head is generally at first pained, or the patient complains of much noise within it, sleeps little, has a loathing at food, with a foul dry tongue, and a considerable thirst, whilst the bowels are constipated. Sometimes she talks incoherently, or moans much during her slumber, and has frightful dreams: occasionally a cough, or distressing vomiting supervenes. This disease is very obstinate, and oftens ends in abortion; after which, if the woman do not sink speedily under the effects of the process, she begins to recover, but remains long in a chlorotic state, which if not removed, may terminate in phthisis. We ought, on the very first attack of this disease, to check it, by an opiate and warm diluents, with the saline julap. If the proper opportunity be lost, or these means fail, we must lessen irritation by detracting some blood, prevent feculent accumulation, keep the surface moist, and palliate troublesome symptoms. The strength is to be supported. In a state of convalescence, gentle exercise and pure air are useful, but every exertion must be avoided.

SECTION THIRD.

Vomiting is a very frequent effect of pregnancy, and occasionally begins almost immediately after conception. Generally it takes place only in the morning, immediately after getting up, and hence it has been called the morning sickness. It usually continues until the period of quickening, after which it decreases or goes off, but sometimes it remains during the whole of gestation. Some women do not vomit, and have very little if any sickness; others begin, after the fourth month, to feel some irritation about the stomach and other viscera; and some remain free from inconvenience till the conclusion of pregnancy, when the distension of the

womb affects the stomach. The fluid thrown up is generally glary or phlegm, and the mouth fills with water previous to vomiting; but if the vomiting be severe or repeated, bilious fluid is ejected. Generally there is no occasion to prescribe any remedies. Puzos, and others, even considered vomiting as salutary; but in some cases, it is so obstinate, that the woman is in danger of miscarrying, or of suffering from want of food. It is a general rule, in such cases, to take away a small quantity of blood, a quantity proportioned to the vigour and fulness of the habit, and state of the pulse. Of the utility of this practice, the general testimony of practitioners, and my own observation, fully convinces me. Narcotic substances, such as opium or hyocyamus, have been tried, either without blood-letting or subsequent to it, but generally with little advantage. More certain relief is obtained by mild laxatives. The severity of the vomiting may also be greatly mitigated by effervescing draughts, or the aerated alkaline water: the last of which, if it do not check the vomiting, renders it much easier. Even cold water has been employed with advantage. A light bitter infusion is sometimes of service. Obstinate vomiting, especially if accompanied with pain, or tension in the epigastric region, may be relieved by the application of leeches to that part, which have been much recommended by Dr. John Sims, and M. Lorentz. If these means fail, it is necessary to refrain for a time from eating, and have recourse to nourishing clysters, or to give only a spoonful of milk, soup, &c. at a time. When the vomiting is bilious, and accompanied with pain in the right side and shoulder, cough, and other symptoms of hepatitis, a seton should be immediately introduced in the side, and a very gentle course of mercury given; for if the medicine be given freely, it produces much debility, or abortion, and sometimes accelerates the fate of the patient.

When vomiting is troublesome in the conclusion of pregnancy, it is proper to detract blood, and confine the person to bed. Cloths, dipped in laudanum, should be applied to the pit of the stomach, and a grain of solid opium may be

given internally; but if this do not succeed, it is not proper to give larger and repeated doses. Gentle laxatives must be employed.

SECTION FOURTH.

Heartburn often takes place very early after conception, but sometimes not till after the fourth month. This is a complaint so very common, and so generally mitigated by absorbents, such as magnesia or chalk, that we are seldom consulted respecting it. But when it becomes very severe and intractable, it is requisite to try the most powerful of these means, such as calcined magnesia, combined with pure ammonia. When these fail, the aerated alkaline water, or the chalk mixture, with a large proportion of mucilage, may give relief. In obstinate cases, venesection and laxatives are useful.

SECTION FIFTH.

Women, during gestation, are subject to many *bizarreries* in their appetite, and often have a desire to eat things they did not formerly like. This desire is common in cases of abdominal irritation, as we see in those who are afflicted with worms, or have indurated or morbid fæces in the intestines. These longings, it has been thought dangerous to deny, for as it was supposed, that they depended upon some peculiar state of the child affecting the mother; it was imagined, that if this was not removed, the infant would sustain an injury, or might even bear the mark of the thing longed for. Into this doctrine, it is now unnecessary to enter, and it will be sufficient to add, that when the desire is placed upon any article of diet, it may be safely gratified, and, indeed, generally the inclination leads to some light and cooling regimen.

SECTION SIXTH.

Spasm of the stomach, or duodenum, may often be attributed to some irregularity of diet, to the action of cold, or to the influence of the mind. It is necessary to interfere promptly, not only because the pain is severe, but also be-

cause it may excite abortion. A full dose of laudanum, with ether, is almost always successful; but when the attacks are renewed, then we must endeavour to prevent them by tonics, such as colombo, oxyde of bismuth, or preparations of steel, at the same time, that the bowels are to be kept open.

When spasm of the stomach takes place in the end of pregnancy, or about the commencement of parturition, with a sense of fulness or uneasiness in the head, it is necessary to detract blood, lest the patient be seized with convulsions. This remedy is likewise proper, when the pain is accompanied with tenderness about the epigastric region, heat of the skin, full pulse, and ruddy face.

SECTION SEVENTH.

Costiveness is a general attendant on pregnancy, partly owing to the pressure of the uterus on the rectum, and partly owing to the increased activity of the womb producing a sluggish motion of the bowels. We must not, however, neglect this state, because it naturally attends gestation, for it may occasion many evils. It certainly increases some of the stomachic ailments; it is very apt to cause irritation of the bowels, or piles; and may either excite premature labour, or give rise to much inconvenience after delivery.

Magnesia is a very common remedy, because it at the same time relieves heartburn; but, when it fails, or is not required, on account of acidity in the stomach, the common aloetic pill, or a combination of aloes, with extract of hyocyanus, should the former gripe, may be employed. Castor oil is also given, either alone, or made into an emulsion with mucilage. Roderic à Castro advises the woman to attempt to have a stool every day, in order to keep up the habit.

It sometimes happens, that indurated fæces are accumulated in the rectum or colon, producing considerable irritation. This causes not only pain, but also an increased secretion of the intestinal mucus, which is passed either alone, or with blood, together with pieces of hard fæces. This state, like dysentery, is often accompanied with great tenesmus, but it may be readily distinguished, by examining

per vaginam, for the rectum is found to be filled with fæces. Our first object ought to be to remove the irritating cause, which might ultimately produce abortion. Clysters are of great efficacy, because they soften the fæces, and assist in emptying that part of the intestine which is most distended. These are to be, at first, of a very mild nature, and must be frequently repeated. It may even be requisite to break down the feculent mass, with the shank of a spoon, or some such instrument. After the rectum is emptied, laxatives, such as castor oil, or small doses of sulphate of magnesia must be given to evacuate the colon; and when the fæces are brought into the rectum, clysters must be again employed. After the bowels are emptied, hyocyamus should be given, to allay the irritation; or if this be not sufficient, and the pain and secretion of mucus, with tenesmus, still continue, an anodyne clyster must be administered, but next day it is to be followed by a mild laxative. If this costive state be neglected near the time of delivery, the labour is often protracted; and after delivery, masses of indurated fæces come down from the colon, producing considerable pain and frequency of pulse. When there is much irritation and sensibility, upon pressing on the abdomen, either before or after delivery, it will be proper to detract blood, at the same time that we use the remedies already pointed out.

SECTION EIGHTH.

The bowels instead of being bound, may be very open; or costiveness and diarrhœa may alternate with each other. The diarrhœa is of two kinds; a simple increase of the peristaltic motion, and increased mucous secretion; or a more obstinate disease, depending on debilitated and deranged action of the bowels. In the first kind, the discharge is not altered from the natural state, except in being thinner; the appetite is pretty good, and the tongue clean, or only slightly white. This is not to be checked, unless it go to a considerable extent, or continue long, or the patient be weakened by it, or be previously of a debilitated habit. Anodyne clysters, or the confectio catechu, will then be of service. Should

the pulse be frequent, and any degree of heat or tension be felt in the abdomen, venesection will be useful. In the second kind, the appetite is lost or diminished, the tongue is foul, and the patient has a bitter or bad taste, and occasionally vomits ill tasted or bilious matter; the breath is offensive, and often the head aches. The stools are very offensive, and generally dark coloured. In this case, small doses of rhubarb give great relief, and some are in the habit of adding two grains of ipecacuanha to each dose of the rhubarb. A light bitter infusion is also a useful remedy. Attention must be paid to the diet, which is to be light, and the food taken in a small quantity at a time. Considerable benefit is derived from the soda water, which generally abates the sickness. When the tongue becomes cleaner, and the stools more natural, anodyne clysters may be administered. In all cases of continued diarrhœa, it is useful to have the surface kept warm with flannel; and sometimes a flannel roller, bound gently round the abdomen, gives great relief.

SECTION NINTH.

Pregnant women are very subject to piles, which may be partly owing to the pressure of the womb upon the vessels of the pelvis, but is chiefly to be attributed to a sluggish state of the intestinal canal, communicating a similar torpor to the hemorrhoidal veins. As this state is attended with costiveness, the disease has been considered as dependent on the mechanical action of the fæces; but whatever truth may be in this opinion, in some cases, yet generally it is without foundation; and it is no unusual thing for those who are subject to piles, to be able to foretel an attack, by the appearance of peculiar symptoms, indicating diminished action of the alimentary canal. The treatment of this disease is two-fold. We are to remove the cause by such means as give a brisker action to the bowels, such as bitters and laxatives; which last are also of great service, by removing the irritation of the fæces from the rectum, and rendering them softer, by which the expulsion gives less pain. For this purpose, cream of tartar alone, or combined with sulphur, has

been generally employed; but we may, with equal advantage, give small doses of castor oil, or of any of the mild neutral salts, dissolved in a large quantity of water. Besides removing the cause, we must likewise lessen the effect, by such local means as abate irritation and sensibility. When the pain, inflammation, and swelling, are great, it is of service to detract blood, by the application of leeches, or by making small punctures with a lancet. Cooling and anodyne applications are also very proper, such as an ointment containing a small quantity of acetate of lead, or a weak solution of the acetate of lead in rose water, or a mixture of the acetum lithargyri and cream. Sometimes astringents are of service, such as the gall ointment; or narcotics, such as opium* or belladonna. If these means fail, it will be proper to give an anodyne clyster, and apply fomentations or emollient poultices to the tumour. In some cases, the tumour becomes slack, and subsides gradually; in other instances it bursts, and more or less blood is discharged. If the hemorrhage be moderate, it gives relief; but if profuse, it causes weakness, and must be restrained by pressure and astringents. Great pain, or much hemorrhage, are both apt to excite abortion.

SECTION TENTH.

The bladder is often affected by pregnancy. In some instances, like the intestines, it becomes more torpid than formerly; so that the woman retains her water long, and expels it with some difficulty, and in considerable quantity at a time. This state requires great attention, for retroversion of the uterus may, at a certain stage of gestation, be readily occasioned. There is not much to be done with medicines in this case; for, although soda, and similar remedies, sometimes give relief, yet more reliance must be placed on the regular efforts of the patient. Should these be delayed too long, then the catheter must be employed.

* D. Johnston advises the following ointment to be applied, and then a poultice to be laid over the tumour. \mathcal{R} Ol. Amygd. \mathfrak{z} i. Ol. Succini \mathfrak{z} ss. Tk. Opii. \mathfrak{z} ii. M. *System* p. 125.

More frequently, the bladder is rendered unusually irritable, especially about its neck, and the urethra participates in this state. There is also, in many instances, an uneasiness felt in the region of the bladder itself. This state requires a very different treatment from the former, for here it is our object to avoid every saline medicine which might render the urine more stimulating. Relief is to be expected, by taking away blood, giving small doses of castor oil, and, occasionally, the extract or tincture of hyocyamus, and encouraging the patient to drink mucilaginous fluids, which, if they do not reach the bladder as mucilage, at least afford a bland addition to the blood, from which the urine is secreted. This state of the bladder is sometimes productive of a slight irritation about the symphysis of the pubis, rendering the articulation less firm and more easily separated. In such circumstances, when the pubis is tender, blood-letting and rest are the two principal remedies. A very distressing affection, which is often conjoined with this state of the bladder and urethra, but which may also take place without it, is a tender and irritable state of the vulva, producing a great heat and itching about the pudendum, especially during the night, and generally the urine is felt very hot. This distressing condition is often alleviated by blood-letting and laxatives; and when the itching is great, a sponge, dipped in cold water, or in cold solution of cerussa acetata, should be applied. If much fever exist, the saline julap, combined with a little tincture of opium, is useful.

Incontinence of urine is not uncommon, in the end of gestation, and is produced by the pressure of the uterus on the bladder, by which the urine is forced off involuntarily, whenever the woman coughs or moves quickly; or at least she cannot retain much of it, being obliged to void it frequently, but without strangury. For this complaint there is no cure, and many consider it as a favourable omen, that the child's head is resting on the os uteri. When the uterus is very pendulous, some advantage may be obtained, by supporting the belly with a proper bandage attached to the shoulders.

SECTION ELEVENTH.

Connected with the state of the alimentary canal, is the jaundice of pregnant women. This disease appears at an early period, and is preceded by dyspeptic symptoms, which generally increase after the yellowness comes on. In some instances, the tinge is very slight, and soon disappears. In other cases, the yellow colour is deep and long continued, and the derangement of the stomach and bowels considerable. Emetics, and other violent remedies, which are sometimes used in the cure of the jaundice, are not allowable in this case; and in every instance, when young married women are seized with jaundice, we should be very cautious in our prescriptions. Mild laxatives, with some light bitter infusion, are the most proper remedies, and generally, the complaint soon goes off. Jaundice may also take place in the end of gestation, and in this case it proceeds most frequently from pressure on the gall duct. Sometimes, however, it is dependent on a disease of the liver itself, which may occur at any period of gestation, and is marked by the usual symptoms. In this case, the danger is very great, and can only be averted, by taking cautious measures for removing the hepatic disease.

SECTION TWELFTH.

In come cases, the skin is partially coloured; the mouth, for instance, being surrounded with a yellow or brown circle, or irregular patches of these colours appearing on different parts of the body. This is an affection quite independent of the state of the bile, and seems rather to be connected with certain conditions of the alimentary canal. It goes off after delivery, and does not require any peculiar treatment.

SECTION THIRTEENTH.

The thoracic viscera not unfrequently suffer during pregnancy. Palpitation of the heart is a very common affection, and extremely distressing. It is a disease so well known, that it is needless here to describe it. It may make its attack

repeatedly in the course of the day; or only at night, before falling asleep; or at the interval of two or three days, and is very readily excited by the slightest agitation of the mind. It is a disease, generally void of danger, but in delicate women, and in those who are disposed to abortion, it sometimes occasions that event; and if long continued, it may excite pulmonic disease in those who are predisposed to it. Absolute rest, with antispasmodics, are requisite during the paroxysm. Hartshorn, ether, and tincture of opium, may be given separately or combined. Roderic à Castro prescribes a draught of hot water. The attacks are to be prevented by the administration of tonics, such as tincture of muriated iron; and of fœtids, such as valerian and assafœtida. Fatigue and exertion must be avoided, and the mind kept tranquil. If the person be plethoric, it is sometimes useful to take away a little blood. The bowels must be kept open.

SECTION FOURTEENTH.

Another distressing affection of the heart, attendant on pregnancy, is syncope. This may take place at any period of gestation, but is most frequent in the three first months, or about the time of quickening. It may succeed some little exertion, or speedy motion, or exposure to heat, but it may also come on when the person is at perfect rest. The paroxysm is sometimes complete, and of long duration; at other times, the person does not lose her knowledge of what is going on, and soon recovers. A recumbent posture, the admission of cold air, or application of cold water to the face, the use of volatile salt, and the administration of cordials, constitute the practice during the attack. Should the fit remain long, we must preserve the heat of the body, otherwise a protracted syncope may end in death. Those who are subject to fainting fits, must avoid fatigue, crowded or warm rooms, fasting, quick motion, and agitation of the mind. Tonics are sometimes useful.

There is a species of syncope, that I have oftener than once found to prove fatal in the early stage of pregnancy, which is dependent, I apprehend, on organic affections of

the heart, that viscus being enlarged, or otherwise diseased, though perhaps so slightly, as not previously to give rise to any troublesome, far less any pathognomonic symptoms. Although I have met with this fatal termination most frequently in the early stage, I have also seen it take place so late as the sixth month of pregnancy.

SECTION FIFTEENTH.

Sudden attacks of dyspnœa in those who were previously healthy, are generally to be considered as hysterical, and are readily removed by antispasmodics. There is, however, a more obstinate and protracted symptom, not unfrequently connected with pregnancy, namely cough. This may come in paroxysms, which are generally severe, or it may be almost constant, in which case it is short and teasing. Sometimes a viscid fluid is expectorated, but more frequently the cough is dry. During the attack, the head is generally painful, and the woman complains much of the shaking of her body, especially of the belly. All practical writers are agreed with respect to the danger of this disease, for it is extremely apt to induce abortion; and it is worthy of remark, that after the child is expelled, the cough often suddenly ceases. But exposure to cold frequently brings it back; and should there be a predisposition to phthisis, that disease may be thus excited. Blood-letting must be early, and sometimes repeatedly employed; the bowels kept open; and lozenges, containing opium or hyoscyamus, must be occasionally used, to allay the cough. A large burgundy pitch plaster, applied betwixt the shoulders, may be of service. Should abortion take place, and the cough continue, tonics, such as myrrh and oxyde of zinc, ought to be administered.

SECTION SIXTEENTH.

In some instances, hæmoptysis or hæmatemesis take place in pregnancy, especially in the last months, and these are very dangerous affections. Blood-letting is the remedy chiefly to be depended on; and afterwards, opiates should be given, in small but repeated doses, to allay irritation. If

these means do not succeed, the patient dies. Should the hemorrhage take place during labour, or should pains come on prematurely, and the os uteri dilate, as sometimes happens, it will be prudent to accelerate the delivery.

SECTION SEVENTEENTH.

Headach is a very alarming symptom, when it is severe, constant, and accompanied with symptoms of plethora. If the eye be dull, and the head giddy, especially when the person stoops or lies down, with a sense of heaviness over the eyes, or within the skull, great danger is to be apprehended. This is increased, if the woman complain of ringing in the ears, and flashing of fire in the eyes, or indistinct vision. In such circumstances, she is seized either with apoplexy or epilepsy. These diseases are to be prevented by blood-letting and laxatives; and the same remedies are useful, if either one or other of these have already taken place. The quantity of blood which is to be detracted, must be determined by the severity of the symptoms, the habit of the patient, and the effect of the evacuation; but, generally, moderate evacuation will prevent, whilst very copious depletion is requisite to cure these diseases. It is farther proper to remark, that, if the patient is seized with apoplexy, there is seldom any attempt made to expel the child, and, in my own practice, I have never known that event take place. In epilepsy, on the contrary, if the paroxysm be protracted, there is generally an effect produced on the uterus; its mouth opens, and the child may be expelled, if the patient be not early cut off by a fatal coma. Whenever expulsive effects come on, we must conduct the labour according to rules hereafter to be noticed. In some instances, palsy either succeeds an apoplectic attack, or follows headach and vertigo. This disease does not commonly go off until delivery have taken place; but it may be prevented from becoming severe, by mild laxatives and light diet; and, after the woman recovers from her labour, the disease gradually abates, or yields to appropriate remedies.

All headachs, however, do not forbode these dismal

events, for often they proceed from the stomach, and evidently depend on dyspepsia, or nervous irritation. These are generally periodical, accompanied with a pale visage; they feel more external than the former, and are often confined to one side of the head. They are attended with acidity in the stomach, eructations, and sometimes slight sickness, with bitter taste in the mouth. They are relieved by gentle laxatives, sleep, the moderate use of volatiles, and the application of ether externally.

SECTION EIGHTEENTH.

Toothach not unfrequently attends pregnancy, and, sometimes, is a very early symptom of that state. The tooth may be sound or diseased, but, in neither case, ought we to extract it, if it be possible to avoid the operation. I have known the extraction followed in a few minutes by abortion. Blood-letting frequently gives relief, and, sometimes, a little cold water taken into the mouth abates the pain. In other cases, warm water gives more relief.

SECTION NINETEENTH.

Salivation is, with some women, a mark of pregnancy. It has been supposed that there is a sympathy existing between the pancreas and salivary glands, and that the phlegm rejected by vomiting proceeded from the former, whilst, in many instances, the latter yielded an increased quantity of viscid saliva. This is a symptom which scarcely demands any medicine, but, when it does, mild laxatives are the most efficacious.

SECTION TWENTIETH.

Pain and tension of the mammae frequently attend gestation, and these symptoms are often very distressing. If the woman have formerly had a suppuration of one mamma, that breast is generally most painful, and she is afraid of abscess again forming. In other instances, the pain, being accompanied with increased hardness of the breast, produces apprehension of cancer. These fears are generally

groundless. Blood-letting often relieves the uneasy feeling, which is also mitigated by gentle friction with warm oil. Nature often gives relief, by the secretion of a serous fluid which runs out from the nipple; but if this be much encouraged by suction, Chambon remarks that the fœtus may be injured. The sudden abatement of the pain and fulness of the breasts, with a diminution of size, are unfavourable circumstances, indicating either the death of the child, or a feeble action of the womb.

SECTION TWENTY-FIRST.

In the course of gestation, the feet and legs very generally become œdematous; and sometimes the thighs, and labia pudendi, participate in the swelling. The swelling is by no means proportioned always to the size of the womb, for, as has been remarked by Puzos, those who have the womb unusually distended with water, and those who have twins, have frequently very little œdema of the feet. This disease is partly owing to the pressure of the uterus, but it also seems to be somewhat connected with the pregnant state, independent of pressure; for in some instances, the œdema is not confined to the inferior extremities, but affects the whole body. A moderate degree of œdema is so far from being injurious, that it is occasionally remarked, that many uneasy feelings are removed by its accession; but a greater and more universal effusion marks a dangerous degree of irritation, and may be followed by epilepsy. In ordinary cases, no medicine is necessary; but, when the œdema is great and attended with unpleasant or dangerous effects, we must lessen it by means of those agents which alleviate the other diseases of pregnancy, namely blood-letting and aperients. These means are always proper, unless the strength be much reduced; in which case, we must give cordials prudently, and acetate of potash, or sweet spirit of nitre. Diuretics, generally, are not successful, and many of them, if given liberally, tend to excite abortion. Friction relieves the feeling of tension.

SECTION TWENTY-SECOND.

Ascites may be excited, in consequence of some condition connected with gestation, or may be independent of it, arising from some of the ordinary causes of dropsy, especially from a disease of the liver. In the last case, medicine has seldom much effect in palliating or removing the disease; and the woman usually dies, within a week or two after her delivery, whether that have been premature or delayed till the full time. When ascites is not occasioned by hepatic disease, it is connected with the œdematous state above mentioned, and seldom appears until the woman has been at least three months pregnant. It generally abates and goes off, a little before, or soon after delivery. I have seen diuretics given very freely in these cases, but most frequently without any benefit. On this account, and also from the danger of these exciting abortion, or premature labour, I am inclined to dissuade from their use, except in urgent cases. Then the mildest ought to be employed, such as cream of tartar, juniper tea, acetate of potash, &c. If any of these produce much irritation of the urinary organs, they must be exchanged for others.

SECTION TWENTY-THIRD.

When the liquor amnii is in too great quantity, much inconvenience is produced, and not unfrequently the child perishes. This disease is known, by the woman being unusually large at an early period of gestation, for generally, by the seventh month, she is as big as she ought to be in the ninth. It is distinguished from ascites, by the motion of the child being felt, though obscurely, and the breasts enlarging. This is to be considered as a dropsical affection, but the health seldom suffers; the tongue however, is white, and the urine is diminished in quantity. The legs are less apt to swell than in a common pregnancy. The distension may, in the advanced stage, prove troublesome. When the quantity of water is greatly increased, the child is seldom kept till the full time, but is generally expelled in the eighth month

or sooner, and the labour is apt to be accompanied or succeeded by uterine hemorrhage. In some instances, the child occupies the upper part of the uterus, and the water the under, at least during labour. Twice in the same woman, in succeeding pregnancies, I found the child contained in the upper part of the uterus, and embraced by it as if it were in a cyst, whilst several pints of water lay between it and the os uteri. When the water came away, filling several basons, then the child descended to the os uteri, but was born dead, with the thighs turned firmly up over the abdomen, and other marks of deformity.

If the liquor amnii be not increased so much in quantity, the woman may go to the full time, but, from the distension of the uterus, is apt to have a lingering labour.

Tonics, the cold bath, dry diet, with occasional venesection, and the use of laxatives, during pregnancy, may be of service, but frequently fail. I think it is useful, for preventing a repetition of the disease, to make the mother nurse, even although her child be dead. Diuretics are improper.

When the distension produces much distress, it has been proposed to draw off the water, by the os uteri; or this has been done in one case by the common operation of paracentesis, the woman surviving, and labour taking place on the twenty-first day.* This practice is, however, generally improper, and is seldom requisite, pains usually coming on whenever the symptoms become severe. When the os uteri is considerably dilated by the pains, it may be proper to rupture the membranes, as has been advised by Puzos.

SECTION TWENTY-FOURTH.

Discharges of watery fluid from the vagina are not unfrequent during pregnancy, and generally depend upon secretion from the glands about the cervix uteri. It has been supposed, that in every case they proceeded from this cause, or from the rupture of a lymphatic, or the evacuation of a fluid collected between the chorion and amnion, or the water

* Vide case by Noel Desmarais, in *Recueil Period.* tom. VI. p. 349. M. Baudelocque gives a memoir on this subject in the same volume.

of a blighted ovum, in a case of twins; for in every instance where the liquor amnii has been artificially evacuated, labour has taken place. But we can suppose, that the action of gestation may, in some women, be so strong, as not to be interrupted by a partial evacuation of the liquor amnii. Even granting the water to be collected exterior to the chorion, there must be a strong tendency to excite labour, if the quantity discharged be great;* and if the uterus can resist this, it may also be unaffected by the evacuation of liquor amnii. I have known instances, where after a fright or exertion, a considerable quantity of water has been suddenly discharged, with subsidence of the abdominal tumour, or feeling of slackness; and even irregular pains have taken place, and yet the woman has gone to the full time.† These prove, as far as the nature of the case will admit of proof, that the water has been evacuated. Sometimes, only one discharge has taken place, but oftener the first has been followed by others; and these are often tinged with blood. The aperture seems to heal, if gestation go on; for, during labour, a discharge of water takes place. Much more frequently labour does take place. Even when the discharge proceeds only from the vessels or glands about the os uteri, if the woman be not careful, a hemorrhage may take place, followed by labour.

The practice, in these cases, is to confine the patient for some time to bed. An anodyne ought also to be given, and may be repeated occasionally, if she be affected either with irregular pain or nervous irritation. If we suppose the discharge to be from the glands or vessels about the os uteri,

* Vide Dr. Alexander's case, in *Med. Comment.* vol. III. p. 187.

† Dr. Pentland relates a very distinct case, where the liquor was, in the third or fourth month, discharged in a fit of coughing. The belly fell, but she still went on to the full time, and had a good labour. *Dublin Med. and Phys. Essays*, No. I. art. III.—I have known a discharge of water take place, at short intervals, for some weeks; and then the funis umbilicalis protruded, without any exertion or any pains to rupture the membranes, which is a demonstration that the membranes had been previously open, and that the discharge of liquor did not speedily excite labour.

we may, with advantage, inject some astringent fluid, such as a solution of sulphate of alumine.

It sometimes happens, that a large hydatid is lodged between the ovum and the os uteri, but it may be expelled several weeks before parturition.

SECTION TWENTY-FIFTH.

Varicose tumours sometimes appear on the legs. They are not dangerous, but are often painful. By pressure, they can be removed; but I am not sure that it is altogether safe to apply a bandage round the legs, so tight as to prevent their return. It is better, in ordinary cases, to do nothing at all; but where there is much pain, a recumbent posture, and moderate pressure, give relief.

SECTION TWENTY-SIXTH.

From the distension of the abdominal muscles, pain may be produced, either about the extremities of the recti muscles, or the origins of the oblique or transverse muscles. These pains are not dangerous, but give unnecessary alarm if the cause be not known. It is impossible to remove them, but they may be mitigated by anodyne embrocations. There is another cause of pain, which sometimes affects these muscles, but oftener those about the pelvis and hips. This seems to consist in a diminished power of the muscles, in consequence of the uterine action, and thus the fibres are not capable of the same exertion as formerly. A long walk, or some little fatigue, may produce such an effect, as to render them painful for a long time; or even without any unusual degree of motion, they may ache, and produce the sensation of weariness. These pains have been supposed to be most frequent when the woman has twins, but this is far from being a general rule. They may occasion an apprehension that she is going to miscarry. Rest is the principal remedy, but, if they be severe, relief may often be obtained by venesection.

SECTION TWENTY-SEVENTH.

Spasm of the ureter, or some violent nephritic affection, may occur during gestation. The pain is severe, the pulse slow and soft, and the stomach often filled with wind. The symptoms are attended with distressing strangury, and, if not soon removed, may cause premature labour. Decided relief is obtained by giving a saline clyster, and, after its operation, injecting eighty drops of laudanum, mixed with a little starch. A sinapism is to be applied to the loin, and if these means fail, blood must be taken away.

SECTION TWENTY-EIGHTH.

Spasms in the inferior extremities are often very distressing. These may come on suddenly, but occasionally they are preceded by a sense of coldness, and accompanied with a feeling of heat. They are removed by a change of posture, and gentle friction. They have, by some, been thought to indicate a wrong presentation of the child, but this opinion is not supported by experience. They proceed from the pressure of the uterus on the nerves in the pelvis.

SECTION TWENTY-NINTH.

In a first pregnancy, the abdominal muscles generally preserve a greater degree of tension than they do afterwards; and therefore, the belly is not so prominent as in succeeding pregnancies. Sometimes the muscles and integuments yield so readily to the uterus, that it falls very much forward, producing a great prominence in the shape, inconvenience from the pressure on the bladder, and pain in the sides, from the increasing weight of the projecting uterus. In such cases, benefit may be derived from supporting the abdomen with a bandage connected with the shoulders. In other instances, the muscles and integuments do not yield freely, but the belly is hard and tense; the woman feels shooting pains about the abdomen, and sometimes miscarries. This state is relieved by blood-letting and tepid fomentations. When the skin does not distend freely, and becomes tender and fretted, or

when these effects are produced by very great distension, benefit is derived from fomenting with decoction of poppies, and afterwards applying a piece of soft linen, spread very thinly with some emollient ointment.

There is sometimes a disposition to distend unequally, so that one side yields more than the other, or even part of one side, or one muscle more than the rest, producing a peculiar shape. This is attended with no inconvenience.

SECTION THIRTIETH.

It is very usual for the navel of pregnant women to become prominent, even at an early stage. In some instances, such a change is produced, as to allow the intestine or omentum to protrude, forming an umbilical hernia; or if the woman have been formerly subject to that disease, pregnancy tends to increase it, whilst, on the other hand, the intestines being soon raised up by the ascending uterus, inguinal and femoral herniæ are not apt to occur, or are even removed if they formerly existed. Umbilical hernia ought to be either kept reduced by a proper bandage, or at least prevented, by due support, from increasing; and during delivery, we must be careful that the intestine be not forcibly protruded; as it might be difficult to replace it. After delivery, a bandage must be applied. Hernia of the bladder should always be reduced in the commencement of labour, for it may interfere with the process of parturition, or the bladder may be exposed to injury. (1*)

SECTION THIRTY-FIRST.

It is not uncommon to find women very desponding during pregnancy, and much alarmed respecting the issue of their confinement. This apprehensive state may be the consequence of accidents befalling others in parturition; but not unfrequently, it proceeds from a peculiar state of mind, depending on gestation. Some, who at other times enjoy good spirits,

(1*) In some cases during gestation, the fibres of the abdominal muscles separate, so that a ventral hernia is formed. The same circumstance may take place during parturition; and the opening is sometimes so large, that afterwards, whenever the muscles contract, a quantity of the intestines is

become always melancholy during pregnancy, whilst others suffer chiefly during lactation. Little can be done by medicine, except to obviate all cause of disease, or uneasiness of the body; the mind is to be cheered, and supported by those who have most influence with the patient.

SECTION THIRTY-SECOND.

Retroversion of the uterus was described by Levret and Gregoire, but was in this country first accurately explained by Dr. Hunter in 1754. It is an accident, which is always attended with very serious, and sometimes fatal consequences, chiefly owing to the effect produced on the bladder. If the pelvis be of the usual size, it may take place at any time between the third and fourth month of pregnancy, or whenever the womb is enlarged to a certain degree by disease. (1) We recognise retroversion of the uterus, by its effects on the bladder, and by difficulty in voiding the fæces. For although the woman is often distressed with tenesmus, she passes little when she goes to stool. When the retroversion takes place, it is not unusual for bearing down efforts to be excited, to expel the uterus from the pelvis. The acute symptoms produced by the distension of the bladder, or the inability to pass the urine freely, first of all call the attention of the woman to the disease; and when we come to examine her, we find a tumour betwixt the rectum and vagina. (2) This is

forced out, so as to form a hard tumour like a child's head. It is necessary in this, and all other cases of large hernia, to be careful that compression be applied immediately after delivery, and also during the expulsion of the child. By neglecting this, syncope and uterine hemorrhage have been occasioned.

(1) Mr. Pearson relates a case, where the uterus was retroverted, in consequence of being scirrhus. Vide Pearson on Cancer, p. 113.—Dr. Marcet gives an instance where the uterus was retroverted, without pregnancy, producing constipation and vomiting. Vide Cooper on Hernia, part II. p. 68.

(2) M. Baudelocque relates a case, where the fundus uteri protruded at the os externum, the patient at the same time having violent inclination to expel something. He was, however, able speedily to reduce the womb to the proper state. Vide l'Art, &c. § 251.—In Dr. Bell's case, a portion of the rectum was protruded by the uterus. Med. Facts, vol. VIII. p. 53.

formed by the fundus uteri, which is thrown backwards and downwards, whilst the os uteri is directed forward, and sometimes so much upwards, as not to be felt by the finger. This is a disease which we would think cannot be mistaken, and yet it is sometimes difficult to distinguish it; for in extra-uterine pregnancy, it has happened, that the symptoms have been nearly the same with those of retroversion;* and tumour of the ovarium has sometimes produced similar effects. Perhaps the diagnosis cannot, in every case, be accurately made, but this is of less immediate importance, as the indications, in such instances, must be the same, namely, to evacuate the bladder, and procure stools.

Retroversion may take place slowly, and it has been said that its progress could be ascertained from day to day; (3) but in most instances, and in every case that I have seen, it has taken place pretty quickly. Sometimes the urine dribbles away involuntarily, or can be passed in small quantity, especially during the commencement of the disease; but often, within a few hours, it becomes almost completely obstructed, with pains about the loins, and a severe bearing down sensation. The great danger proceeds from the distension (4) of the bladder, which either bursts (5) or inflames, (6) and

* Vide Mr. Giffard's case, in *Phil. Trans.* vol. XXXVI. p. 435; and Mr. White's very instructive case, in *Med. Comment.* vol. XX. p. 254.

(3) M. Baudelocque gives a case of this kind, § 253.—In Dr. Bell's case, as the woman complained for five weeks of dysuria only, it is likely, that for that period the retroversion was not complete. *Med. Facts*, vol. VIII. p. 32.—Dr. Hunter supposed that it might take place in various degrees; it might be complete, or semi-complete, or even the os uteri might remain in its natural situation. He says, that Dr. Combe and he saw a case, where the os uteri was pushing out as in a procidentia; but this, perhaps, will not be admitted to have been retroversion. *Med. Obs. and Inq.* vol. V. p. 388.—In the same volume, p. 382, Dr. Garthshore relates an instance of semi-retroversion.

(4) In the case described by Dr. Hunter, *Med. Obs. and Inq.* vol. IV. p. 400, the bladder after death was found to be amazingly distended, but not ruptured.

(5) In Mr. Lynn's case, the bladder burst, and immediately afterwards the woman miscarried, but the uterus after death was found to be still displaced. *Med. Obs. and Inq.* vol. V. p. 388.—Dr. Squire relates an instance in which the bladder also gave way. *Med. Review* for 1801.

(6) In Mr. Wilmer's case, the belly was greatly distended; six pints,

an opening takes place, in consequence of gangrene; or the bladder adheres to the abdominal parietes, its coats becoming thickened and diseased. (7) If the urine cannot be drawn off, death is preceded by abdominal pain, vomiting, hiccups, and sometimes convulsions. The duration of these symptoms is variable.* If the disease do not prove rapidly fatal, so much urine escaping as to prevent a speedy termination, it occasionally happens, that hectic fever is produced. The pulse becomes frequent, the body wastes, and purulent urine is voided; (8) or the person may become œdematous, and the disease pass for dropsy. (9) Our first object is to relieve the bladder, by introducing a catheter, (10) which should be slightly curved, the concavity being directed to the sacrum, or we must employ an elastic catheter. If the instrument do not pass easily, we may derive advantage from introducing the finger into the vagina, and endeavouring to depress the

of urine were drawn off, but the woman soon died. On inspecting the body, the bladder, from the disease of its surface, was found to contain a quantity of coagulated blood, and the inflammation had spread to the colon. In this case, the umbilicus was protruded like half a melon, and the disease was at one time taken for hernia. The uterus was found to be so firmly wedged in the pelvis, that it could not be raised up till the symphysis pubis was sawed away. *Wilmer's Cases*, p. 144.

(7) In Dr. Ross's patient, after the uterus was reduced, abortion took place; and the woman dying, the bladder was found to be thickened, and adhering to the navel. *Annals of Medicine*, vol. IV. p. 284.

* Dr. Perfect's patient died thus on the sixth day. *Cases in Midwifery*, vol. I. p. 394.

(8) This is illustrated by Dr. Garthshore's patient, who, notwithstanding these symptoms, ultimately did well. After the reduction of the womb she miscarried, and fœtid lumps were for some time discharged from the bladder. *Med. Obs. and Inq.* vol. V. p. 382.

(9) In Mr. Croft's case, the disease was of a month's standing, the woman was œdematous, and she was supposed to have dropsy; but by introducing the catheter, seven quarts of urine were drawn off. The introduction was daily repeated for some time, and then occasionally, as circumstances required, for three weeks. The swelling of the legs went off, and the uterus gradually rose. *Med. Jour.* vol. XI. p. 381.

(10) A case is related by Mr. Ford, in which the catheter, being allowed to slip into the bladder, produced a sinous ulcer. *Med. Facts*, vol. I. p. 96.

os uteri, or press back the vaginal tumour. (11) If the catheter cannot be introduced, we have been advised to tap the bladder; (12) but this, fortunately, is seldom requisite.

We must not be deceived with regard to the state of the bladder, by observing that the woman is able to pass a small quantity of water, for it may, nevertheless, be much distended. We must examine the belly, and attend to the sensation produced by pressure on the hypogastric region.

The urine being evacuated, and the most immediate source of alarm being thus removed, we must, in the next place, procure a stool, by means of a clyster; after which, it will be proper to attempt the reduction of the uterus. This is to be done, by introducing two fingers of one hand into the rectum; and a sufficient number of those of the other hand, or the whole hand itself, into the vagina. The uterine tumour is then to be raised up slowly and steadily, and this may sometimes be assisted by elevating the breech of the woman. Forcible and violent attempts are, however, to be strongly reprobated. They give great pain, and may even excite abortion, inflammation, or convulsions. This caution may the more readily be admitted, as we find that, by regularly evacuating the urine, the uterus will reascend in the course of time, and sometimes within twenty-four hours after the bladder is emptied. (13) When the uterus ascends, sometimes a little blood is discharged;* but abortion does not take place, unless much injury has been sustained. Thus the woman has miscarried quickly after the bladder had

(11) In Mr. Hooper's case, whenever the tumour was pressed back, the woman called out that she could now make water. *Med. Obs. and Inq.* vol. V. p. 104

(12) This was done by Dr. Cheston. The woman remained long very ill, but she carried her child to the full time, and recovered. *Med. Commun.* vol. II. p. 96.—In one instance, by using a long trocar, the uterus was wounded, and the woman died.

(13) Dr. Hunter mentions a case, in which the uterus recovered itself immediately after the bladder was emptied. *Med. Obs.* vol. IV. p. 408—And in Mr. Croft's second case, the water having been drawn off for six days, the uterus suddenly rose. *Lond. Med. Jour.* vol. XI. p. 384.

* M. Rogert's case, in *Act. Havn.* tom. II. art. 17.

burst, as in Mr. Lynn's patient; or when inflammation had taken place, as in the cases related by Drs. Bell and Ross. When this happens, the uterus rises indeed, but the patient is cut off by peritoneal inflammation, (14) followed by vomiting of dark coloured stuff.

That the uterus does generally rise spontaneously, if the urine be regularly evacuated, is a fact of which I am fully convinced, from my own experience, as well as from the observations of others. But it is, nevertheless, possible for it to continue in a malposition, even to the end of gestation. (15) In this case, the uterus cannot, indeed, at last be said exactly to be retroverted; for it has enlarged so much, that it occupies nearly as much of the abdomen as usual; but it has enlarged in a peculiar way, the os uteri being still directed to the symphysis pubis, or even perhaps raised above it. In such a case, which is exceedingly rare, the labour will be very tedious and severe. The os uteri will be very long of being felt, and will be first perceived at the pubis.

In order to prevent retroversion, we must understand its cause, which most frequently, if not always, consists in distension of the bladder. The os uteri is thus elevated, and the

(14) Both Dr. Ross's patient, and Dr. Cheston's patient, the latter of whom recovered, complained of uneasiness in the throat, which Dr. C. considers as a mark of slow peritoneal inflammation.

(15) This circumstance has been mentioned by different writers, and a distinct case is related by Mr. Merriman, in the *Med. and Phys. Jour.* vol. XVI. p. 388 — Mrs. F. being about five months pregnant, was suddenly terrified, and felt as if her inside were turned upside down. The symptoms, however, were not very acute, for she voided the urine in the last month of gestation, though with pain and some difficulty. On the 16th of June, she had some pains, and a discharge of serous fluid; no os uteri could be felt, but a large semi-globular tumour at the back part of the vagina, bearing down toward the perinæum. The pains brought on fever, and at last delirium and convulsions. She was bled, and had a clyster, after which she got some sleep, and the pains continued moderate, though regular for two or three days, and she passed both urine and stools. On the 20th, nothing like os uteri could be felt; but on the 21st, there was perceived a thick flattened fleshy substance descending into the vagina, and very soon the uterus was restored to its natural situation. The substance was found to be the scalp of the child, containing loose bones. The child and placenta were delivered, and the mother recovered.

fundus falls in the same proportion backward. Now in the unimpregnated state, the fundus is not sufficiently heavy or large to fall down; and after the fourth month of pregnancy, the uterus is too heavy to be much raised by the bladder, and too large to fall into the pelvis. If, however, the pelvis be very wide, and the uterus have consequently been longer than usual of rising, it may be retroverted at a later period. It would appear, that agitation, or violent exertion, (16) may cause this state to take place more readily than would otherwise happen; but whether concussion, or other circumstances, can produce retroversion, without some previous distension of the bladder, is not positively proved, though some facts favour the supposition.

The same woman has been known to have the uterus retroverted in two successive pregnancies.*

SECTION THIRTY-THIRD.

The uterus is also said to be sometimes antiverted, that is to say, the fundus is thrown forward, so as to compress the neck of the bladder, and its mouth is turned to the sacrum. (17) Of this accident I have never seen an instance, and, from the nature of the case, it must be very rare. The urine should be evacuated, and the fundus raised up.

(16) In Mr. Bird's case, the accident succeeded stooping, in washing clothes. *Med. Obs. and Inq.* vol. V. p. 110.—In Mr. Hooper's case, the woman was frightened by an ox, and in attempting to escape fell down, after which the symptoms appeared.—Mr. Evan's patient ascribed it to lifting a burden. *Med. Comment.* vol. VI. p. 215; and Mr. Swan's patient to a fall, p. 217.—Mr. Merriman's patient first complained after being suddenly terrified; and Mr. Wilmer's patient had the uterus retroverted, after being fatigued with weeding.

* Vide case by Dr. Senter, in *Trans. of Phys. at Philadelphia*, p. 130. Both times it was reduced by the hand.

(17) Vide Chambron. *Malad. de la Grossesse*, p. 166.—M. Baudelocque relates a case from the practice of Choppart, where it was produced in the second month of pregnancy, by the action of an emetic. *L'Art, &c.* § 255

SECTION THIRTY-FOURTH.

Rupture of the gravid uterus may take place at any period of gestation. The moment of the accident is generally marked by severe pain, occasionally by vomiting, and frequently by a tendency to syncope, which, in some instances, continues for a length of time to be the most prominent symptom.* The pain sometimes resembles labour, but more frequently colic, and its duration is variable. In some cases, hemorrhage takes place from the vagina, but the greatest quantity of the blood (18) flows into the abdomen. At the time of the accident, and for a little thereafter, the child is felt to struggle violently. Then the motion ceases, the woman feels a weight in the belly, and, if the pregnancy be far advanced, the members of the child can be traced through the abdominal parieties. (19) The tumour of the belly generally (20) lessens, and milk is secreted, indicating the death of the child.

If hemorrhage, or peritoneal inflammation, do not quickly carry off the patient, we find, that at the end of some time, occasionally of the ninth month of gestation, pains like those of labour come on, which either gradually go off, and the

* Vide Dr. Underwood's case, in Lond. Med. Journ. vol. VII. p. 321.

(18) Sometimes the hemorrhage proves fatal. A singular case is to be met with in the Medical Facts, vol. III. p. 171, by Canestrini, where the woman had a double uterus. One of the uteri, after some pains, burst in the fourth month. The ovum was found entire in the abdomen, and much blood was effused.

(19) A twin case is related by Dr. J. Hamilton, where the uterus was so thin, that even the sutures of the head could be felt through the abdominal parieties. Violent pains were produced by the motion of the child, the uterus felt very light, and the woman had been exposed to a degree of violence. This case had a very considerable resemblance, in some respects, to a ruptured uterus, but she was delivered safely of two children. Cases, p. 124.

(20) Sometimes the tumour rather increases. In Dr. Percival's case, the belly became much larger after the accident, and continued so for about a year. Then it subsided all at once, when the woman was in a recumbent posture. Med. Comment. vol. II. p. 77.

child is retained for many years,† being inclosed in a kind of cyst; or inflammation and abscess take place, and the child is discharged piecemeal. (21)

In some instances, it would appear, that the ovum may be expelled entire into the abdomen; and in that case, it is possible for the child to live for some time, and even to grow out of the uterus. When this happens, its motions are felt more freely and acutely than formerly. As the os uteri opens a little after the expulsion, and a sanguineous discharge takes place, the woman has sometimes been supposed to miscarry. If she survives, the womb slowly decreases in size, and returns to the unimpregnated state, (22) which will assist materially in the diagnosis, between this and extra-uterine pregnancy. The menses return, and though the belly does not subside completely, yet the person continues tolerably well, unless inflammation come on. She may even bear children before the extra-uterine fœtus be got rid of.* If the case is to prove fatal, the pulse becomes quick and small, the belly painful, the strength sinks, and sometimes continued vomiting ushers in dissolution. (23)

† In Dr. Percival's case, the fœtus was retained for 22 years, and then discharged by the rectum.

(21) Dr. Drake's case, where the uterus seemed to burst in the fourth month, terminated by suppuration at the navel. Excrement was for some time discharged at the opening. *Phil. Trans.* vol. XLV. p. 121.—A washerwoman at Brest had the uterus ruptured by a fall in the seventh month, and ultimately expelled the fœtus at the navel. *Mem. of Acad. of Sciences* for 1709.—Guillerm, in the same work for 1746, mentions a woman who had the womb ruptured by a fall in the sixth month. She immediately fainted, and a discharge took place from the vagina. The child was expelled by the anus. See also the cases by Dr. Percival, Mr. Wilson, &c.

(22) In the *Journ. de Med.* for 1780, there is the case of a woman, who had the uterus ruptured in the fourth month of pregnancy. The accident was followed by uterine hemorrhage, which continued for some time. The menses returned, but the belly did not subside. In the ninth month she died. The uterus was found of the natural size, but the rent was still perceptible.

* Vide *Journ. de Med.* tom. V. p. 422

(23) In the *Journal de Med.* for 1780, a case is detailed of a woman, who, in the month of January, being then seven months pregnant, was squeezed betwixt the wall and a carriage, and had the uterus ruptured.

She

Rupture of the uterus may be the consequence of mental agitation,* but in most cases it is owing to external violence. (24) (q)

Three modes of treatment present themselves. To leave the case to nature; to deliver *per vias naturales*; and to perform the cæsarian operation. To dilate the os uteri forcibly, and thus extract the child, is a proposal so rash and hazardous, that I know none in the present day who would adopt it. I question if the woman would live till the delivery were accomplished. The cæsarian operation is safer, and in every respect preferable; but we cannot yet, from experience, de-

She instantly felt violent pain in the belly, and a discharge took place from the vagina, which continued in variable quantity for six weeks. The strength gradually sunk, and in June she began to vomit, and continued to do so for several days, when she died. The abdomen was found inflamed, and contained the remains of a putrid child. The rent was visible in the womb.

* Dr. Percival's patient attributed her accident to a fright; Dr. Underwood's referred hers to mental agitation.

(24) In Mr. Wilson's patient, the accident was produced by being kicked. She complained of pains all night, after the injury, and next day had a sanguineous discharge from the vagina, and soon afterwards was attacked with violent griping pain. The fœtus was ultimately discharged by an abscess, bursting externally. *Annals of Med.* vol. II. p. 317, and vol. IV. p. 401.—Dr. Garthshore's patient ascribed it to violent exercise. *Med. Journal*, vol. VIII. p. 334.—Mr. Goodsir's patient to exertion. *Annals of Med.* vol. VII. p. 412.—In the 5th and 6th volume of the *Journal de Med.* are two cases, the first produced by a fall from a tree, the second by a bruise from a wagon. Other instances, if necessary, might be added.

(q) The uterus may be ruptured by a variety of causes.

1. By external violence, as by blows, falls, pressure, &c.
2. By rude attempts to turn the child, and especially, after the waters are discharged. This has often happened.
3. By convulsions.
4. By the inordinate action of the uterus, constituting what is termed *spontaneous rupture*. This last is, by much, the most common cause. But when rupture is thus produced, we may suspect that an improper treatment has been pursued. We can, undoubtedly, by copious bleeding, and the subsequent administration of opium, so far overcome the *resistance*, and mitigate the *violence of the pains*, as to prevent its occurrence. The same remedies will, moreover, obviate, in most instances, rupture from convulsions, and should never be neglected as precautionary means, where there are any apprehensions of the accident from turning the child. Ed.

termine its advantages, and certainly it ought not to be performed unless we can thereby save the child. The third proposal, therefore, to leave the case to nature, like an extra-uterine pregnancy, is most likely to be successful, more especially when the rupture happens in the early months of gestation. We find, from the result of cases, that the woman has the best chance of recovery, if we are satisfied with obviating symptoms, and removing inflammation in the first instance; and supporting the strength of the patient through the progress of the disease, should it not prove rapidly fatal; enjoining rest, giving mild diet, and favouring the expulsion of the bones, by poultices and fomentations, and, if necessary, by enlarging the abscess if it point externally. (r)

(r) This *negative sort of practice* has, undoubtedly, met with many very respectable advocates. There are, even at the present day, several eminent practitioners, besides Mr. Burns, who strenuously recommend it. Notwithstanding, however, the weight of authority in its favour, I cannot believe it to be right. The powers of nature seem to me to be totally incompetent in such cases. By prompt delivery we can only hope to do good. This, then, we should always attempt. In some cases the forceps may be used, but they are few, as the rupture commonly takes place before labour is sufficiently advanced to admit of their application. We, therefore, turn the child, and bring it away by the feet. Delivery in this manner has been more than once effected, and the woman preserved, even where the child had escaped through the rupture of the uterus into the abdominal cavity. I allude now, more particularly, to the case recorded by Dr. Douglass, and to one which occurred to Dr. J. Hamilton. To these, I may also add, as showing, at least, the practicability of delivery under such circumstances, a case, related by my friend Dr. James in the Medical Repository of New York.

Were the rupture to happen in the earliest stage of labour, I should nevertheless not be deterred from adopting this practice. I would forcibly, but not violently, dilate the uterus. It does not strike me that the attempt would be "rash and hazardous." We often in other emergencies do it with advantage, as in labour attended with hemorrhage or convulsions. Why may it not also be done in lacerated uterus?

But if, by deformity of the pelvis, or contraction of the uterus, (the child being in the cavity of the abdomen) or indeed from any other circumstances, there exist insuperable impediments to delivery *per vias naturales*, I would, without hesitation, resort to the *cæsarean section*. In deliberating on the expediency of adopting this dreadful alternative, we

SECTION THIRTY-FIFTH.

The usual period of utero gestation is nine months, but the fœtus may be expelled much earlier. If the expulsion take place within three months of the natural term, the woman is said to have a premature labour; if before that time, she is said to miscarry, or have an abortion. The ovum may be thrown off at different stages, and in different degrees of perfection. The process of gestation may be checked, even before the embryo has descended into the uterus, and when the decidua only is formed; or it may go on till the different parts of the ovum become completed, and fully organized; and then, something preventing the further continuance of gestation, expulsion takes place. Abortion is usually accompanied with hemorrhage and pain, but the degree to which these may proceed is very various; and a similar observation must be made with respect to the duration of the process. Generally, when the decidua is thrown off before the embryo has entered the uterus, the discharge is more, in proportion, than the pain, which is not of the expulsive kind, but is felt chiefly in the back, resembling the sensation accompanying menstruation, but greater in degree, and frequently accompanied with griping in the bowels. Even at this period, however, the uneasiness has paroxysms of aggravation. Many who are barren, discharge, at irregular periods, shreds and filaments mixed should constantly bear in recollection that we are not without examples of the success of the operation.

Two cases with favourable results are related, one by Dr. Barlow and the other by Dr. J. Hamilton. In the latter case, the bones of the pelvis were so mashed by the wheel of a cart as altogether to prevent delivery by the natural passages. On opening the abdomen, the child was found in the cavity, and the uterus considerably lacerated. But notwithstanding the extent and severity of the injury, the woman entirely recovered.

Let it not, however, be understood that I am at all sanguine as regards the two remedies which I have proposed. I am, on the contrary, persuaded that in most instances, they will wholly fail. But what else can be done in these tremendous cases? To leave them to nature, "*like an extra-uterine conception*," would be, either to consign the woman to immediate death, or what is still worse, to death from protracted and torturing illness. Ed

ed with pure blood. This may proceed from a diseased condition of menstruation, formerly mentioned; but in other cases, it certainly depends upon conception, the uterine system being unable to carry on the action, and the woman being subject to menorrhagia.

When the embryo has descended, and the different appendages of the fœtus are formed, the process is accompanied with more regular pains, often resembling exactly those of labour, and like them becoming of the bearing down kind. The discharge is constant, but is increased during each pain, until the fœtus is expelled, and the involucra thrown off. In many instances, the whole fœtal, with part of the maternal portion of the ovum, is expelled at once, and the rest of the uterine efflorescence comes away with a subsequent discharge of blood, or lochial fluid. But in other cases, the membranes give way, the liquor amnii escapes, and the fœtus slips into the vagina, or is entirely protruded. The symptoms still continue, and the discharge may increase until the rest of the ovum comes away. The whole process is often accompanied with a sensation of faintishness, or sinking about the stomach, which, like the pain, not unfrequently is felt in paroxysms. A variety of hysterical affections may also accompany or succeed the process; and the usual effects, whether immediate or remote, of hemorrhage, on the constitution, are to be expected. Sometimes a febrile state occurs during abortion.

This is not in general a dangerous process; but it has proved fatal, either in consequence of hemorrhage or convulsions; or, by laying the foundation of bad health, it becomes remotely the cause of death.

Abortion will be produced by any cause capable of stopping the process of gestation, and exciting the action of the uterine fibres. It is not merely sufficient that the action of gestation be terminated, for some other action may take place, preventing the accession of muscular contraction. The embryo, for instance, may die, and the ovum undergo a change of structure; it may be converted into hydatids, and this process may subsist for months, before the contents of the womb

are thrown off. The action of gestation may be stopped prematurely, by many causes. The separation of part of the ovum from the uterus, by mechanical violence, such as a fall or blow, or by irregularity of the circulation, or by a plethoric condition, distending, oppressing, and rupturing the vessels passing from the uterus into the ovum, very frequently destroys the action, either in consequence of the hemorrhage, the irritation, or the injury immediately communicated to the uterus or ovum. Rupture of the membranes of the ovum, produced accidentally or designedly, will also very generally destroy the action of gestation, and excite contraction. Irritation applied directly and mechanically to the uterus, or existing in a considerable degree in the neighbouring parts, frequently excites abortion;* and the same effect will be produced, by causing sudden and violent contraction in an organ with which the uterus directly sympathizes; hence the bad effects of severe emetics, which, like a cough, also act mechanically on the uterus, by pressure or concussion. Violent passions of the mind, either in consequence of exciting palpitation, and a rapid motion of the arteries, or of nervous agitation, very often produce abortion. The death of the child, in consequence of an affection of some part of the ovum, or of diseases acting immediately on itself, is another cause of miscarriage. Syphilis often produces abortion in this way. These causes which I have specified, or other circumstances acting in a similar way, will operate more readily in consequence of certain conditions of the uterus, which of themselves may, without any evident exciting cause, produce abortion. The most frequent of these, is an imperfect or debilitated state of the uterus, sometimes dependent on malformation, or morbid change of structure; but oftener upon causes influencing the muscular fibres, vessels, or nerves of the womb. Some of these have their action confined to the uterus itself; such as excessive

* A great variety of acrid substances have been employed for this purpose, or emmenagogues, diuretics, and drastic purges. These, however, if given in moderate doses, frequently fail in producing the desired effect, and if given more liberally, endanger the life of the mother.

venery, frequent miscarriages, repeated menorrhagia, or advancement in life. Others act on the whole system, affecting the womb only in common with other organs; such as general debility, great irritability, or plethora. During pregnancy, various organs are affected by sympathy with the uterus, and sometimes partly by its bulk. Hence the various symptoms, called the diseases of pregnancy. Now these organs may not sympathize properly with the uterus, or they may be too greatly affected; and either of these conditions proves detrimental to the uterus, and interferes with the actions it ought to perform.

The time which intervenes betwixt the application of any of these causes of abortion, and the production of the effect is various. In some cases, the child dies, and the ovum remains for a considerable time, before the expulsive process commences; but during the intervening period, we have generally indications that the action is impaired or destroyed, such as the cessation of the morning sickness, the breasts becoming flaccid, and the child no longer moving. In other circumstances, the first symptom of approaching miscarriage is hemorrhage, with or without uneasiness in the abdomen. These symptoms may continue for only a few hours, or for many days, before expulsion takes place; but if no indication of the death of the child be present, we may, notwithstanding the continuance of these symptoms, have some hope of checking the threatened expulsion, if the muscular fibres of the womb do not begin to contract universally.

When a woman is threatened with abortion, it behoves us to take immediate measures for checking it, provided there be not strong grounds for supposing that the child is dead. The means for preserving gestation must be somewhat modified, by the constitution of the patient, and the circumstances of the case. Generally it is of service to detract blood, because we thus, by moderating the force of the circulation, or activity of the arteries, diminish the risk of farther rupture of vessels, or separation of the ovum. But in those cases where the discharge has been considerable, or the pulse is

weak, either from previous debility, or from the effects of the process, venesection is not necessary, and would often be hurtful. Rest is absolutely requisite in all cases of threatened abortion. The woman must be laid in a recumbent posture, and remain as quiet as possible. Few bed-clothes are to be permitted, because it is essential that she be kept cool, in order to moderate the action of the sanguiferous system; and for the same purpose, the drink and food should be cold, and not of a stimulating quality. The extent, however, to which the cooling plan is to be pushed, is to be determined by its effect, for the patient must not feel permanently cold, nor be kept shivering. Attention is likewise to be paid to the discharge, for, when this is trifling, there is less necessity for pushing the cooling plan far. On the other hand, if it be considerable, we must even apply cloths, dipped in cold water, to the back and vulva. If there be not much depression about the præcordia, or sickness at the stomach, it will be of service to give some doses of digitalis, which will have the effect of lessening the discharge, by moderating the velocity and force of the circulating blood. Last of all, it is of benefit to give an opiate, and take precautions for preventing the patient from being startled. Opiates are of great service; they allay irritation, diminish the risk of muscular contraction taking place, and thus moderate the discharge. Their astringent quality is to be counteracted by suitable remedies. When the threatening symptoms are thus removed, it is still necessary to keep the patient in bed, or on a sofa, for some time. The anodyne is to be occasionally repeated; and it may be necessary, on account of the fulness of the pulse, and the continuance of uneasy sensations about the pelvis or back, to take away a little blood.

When we find, from the regularity of the pains, and continued discharge, that the process of expulsion has begun, and more especially if these symptoms have been preceded for some time, by those indicating the death of the fœtus, then our object is changed. We cannot prevent a miscarriage from taking place; we must, therefore, endeavour to conduct the

woman as safely as possible through the process. In such circumstances we are not to use the lancet; we are to spare the patient as much as possible. We are to save as much blood as we can, by applying cloths, wet with cold water, to the vulva and back; or by stuffing, if necessary, the vagina with a handkerchief, or with tow. The process of expulsion is one which is under the direction of nature, and which can be accomplished generally without assistance. This is to be regarded as an axiom, and our mode of treatment is to be founded upon it; we are, however, to guard against every danger, and mitigate the symptoms. The chief danger proceeds from hemorrhage, which is to be retarded in the manner I have directed, and by avoiding external and internal stimulants. Faintness is another symptom, which may either be produced by loss of blood, or by a peculiar state of the stomach. In a moderate degree, this symptom is not hurtful, because it checks hemorrhage, by retarding the circulation and favouring the formation of coagula. When it is altogether wanting, the digitalis may be given to produce these effects; but when it is present, this medicine is unnecessary, and even pernicious. If it go to a great degree, or be permanent, small doses of cordials are proper; such as a little wine, or hartshorn, with the addition of tincture of opium. Sympathetic pains, or nervous irritation, are to be relieved by anodynes, which are likewise proper when the uterine pains are trifling or protracted. In this case, they either suspend for a time the contractions, or render them more effective, and thus diminish hemorrhage.

With regard to manual assistance, it was formerly the custom to give many directions, how to extract the fœtus, or placenta, with hooks or pincers. But in modern practice, these are discarded. When the hemorrhage is considerable, and the pain trifling, absent, or ineffective, it has been proposed to evacuate the liquor amnii, in order to excite the action of the womb. In some cases this may be necessary, but generally the means already directed will be sufficient to keep the woman in safety, until the whole ovum, or at least

the fœtus, be expelled. After the fœtus comes away, should the hemorrhage prove obstinate, and the remains of the ovum be retained long, it may be requisite to endeavour cautiously, by the introduction of one or more fingers into the uterus, to excite it to throw off the involucra, or to remove them. Where this is necessary, it will be often found that the uterus has contracted circularly in the middle, and that the portion of the membranes in the lower division is loose. This may be laid hold of, and gently pulled. In some instances, part of the ovum is retained for many days, producing dangerous symptoms; but these will be afterwards considered, when I treat of retention of the placenta. For a similar reason, I forbear to notice some other affections which may succeed to abortion.

It still remains to say a few words respecting the means of preventing abortion, in those who, from former experience or other circumstances, are apprehensive that it may take place.

In laying down rules for the management of pregnant women, it behooves us to consider the state of the constitution. In many cases it will be found, that those who are subject to abortion are of a plethoric habit; and indeed, all women during pregnancy, if they be not plethoric, have at least the vascular system in a state of greater activity than formerly. On these accounts, when there is a tendency to abortion, it is, in a great majority of cases, of consequence to detract blood early in pregnancy. The only exception to this rule proceeds from debility, and a small feeble pulse. In all other cases, it is of service to take away blood, which is to be done slowly, and in such a manner as to avoid syncope. The quantity and the repetition of the evacuation, must be regulated by the state of the pulse, and other obvious circumstances. In some instances, the loss of six ounces of blood is of service; which shows that the benefit is not to be attributed so much to the removal of an undue quantity of blood, as to the effect produced on the arterial system, its activity being lessened, and irritation diminished. The digitalis

may often be prescribed with advantage, when the vascular system is too strongly excited, and the pulse frequent or inclined to throb. Half a grain of the powder may be given twice or thrice in the day, for some time, until the period of danger be past. The medicine may sometimes be omitted for a day or two; and when it produces either a diuretic effect, or much debility, or a decided effect on the frequency or regularity of the pulse, it must be given up altogether, for each of these effects is hurtful. It has been objected, that the digitalis, like other narcotics, is apt to kill the child; and doubtless, if given rashly, and so as to keep up its powerful effects on the system for a length of time, it may be hurtful, and ought not in this manner to be employed. But from full experience of this medicine, I can say, that it does not affect the child, unless the mother be also strongly affected, and this we have it in our power to prevent. By attending to the cautions and restrictions laid down, it may, in such cases, as require it, be given very safely, and may be continued with occasional omissions, even for some weeks, but it is seldom necessary to persist in it so long. (s)

The cold bath is of very great service; and should be regularly employed. It is a remedy which is of advantage, both in plethoric and spare habits; only in the former case, it must be accompanied with evacuations. Gentle laxatives, to preserve the bowels regular, are also, in both states, of great benefit; and indeed, of all the remedies employed in the cases at present under consideration, the most effectual, undoubtedly, are the cold bath and mild laxatives, together with moderate blood-letting.

(s) I have in a preceding note, advised some caution in the use of digitalis in uterine floodings. I would here, also, recommend the same degree of circumspection. When given in sufficient quantity to make any very sensible impression on the system generally, it seems, in a very peculiar manner, to relax and debilitate the vessels of the uterus, disposing them, thereby, to *passive* hemorrhage. When, however, it is administered with proper restrictions, I have no doubt it may prove both a safe and a useful medicine. But still, I would greatly prefer to bleed in the above cases. ED.

The exercise ought to be moderate; for violent exertion almost uniformly causes abortion. If there be no symptoms threatening abortion, gentle exercise will be of service, by strengthening the system; but if there be any appearance of discharge, or pain, the patient must be kept at rest for several weeks, and, in such cases, it is sometimes of advantage to inject cold water twice a-day into the vagina.

The diet ought to be light, and not too nutritious nor high seasoned. The sleep should be abridged, and a mattress is preferable to a feather bed. Much warmth, heated rooms, fatiguing parties, dancing, and other exciting causes of abortion, must be carefully avoided.

When the person is not plethoric or robust, but on the contrary, feeble, and of a spare habit, evacuations must not be resorted to, unless considerable irritation of the vascular system appear; and even then, they must be small, and are not to be repeated. The cold bath is to be employed every morning; and when there is a feeble pulse and evident marks of debility, the warm bath may be used every evening for some time previous to conception. Tonics are often given with advantage, and the diet ought to be nourishing, and conjoined with a proper proportion of wine.

In those who are liable to abortion, it is proper that the general state of the system,* disposing to this event, be removed by suitable means, before impregnation takes place; and after conception, the same plan is to be pursued.

Such causes as directly or indirectly operate on the uterus, and excite abortion, are to be carefully avoided. After impregnation, it is essential for the woman to sleep alone for some months.

Even in those cases, where there is no particular tendency to abortion, it is proper to avoid, as much as possible, all great and sudden mental or corporeal irritation. Hence the administration of emetics, drastic purges, diuretic medicines,

* The means of invigorating the constitution, of lessening irritability, &c. have already been pointed out; and when a syphilitic state is suspected in one or both parents, mercury must be employed.

or powerful diaphoretics, is to be prohibited during pregnancy, and much muscular motion is to be avoided. Should it be necessary, on account of syphilis, to exhibit mercury during pregnancy, it must be given very cautiously, and often rather with the view of checking the farther action of the poison, than of curing the disease. It is sometimes necessary to lay down rules for the management of pregnant women, although they be not subject to abortion. These are to be drawn from the remarks already delivered, and it is only necessary to add, that in all cases it is proper to attend to the diseases of pregnancy, or effects of utero gestation, which are to be mitigated when severe, by suitable remedies. For a more minute inquiry into this subject, I refer the reader to my "Observations on Abortion, &c."

SECTION THIRTY-SIXTH.

Uterine hemorrhage, when it occurs in the three last months of pregnancy, or during labour, is one of the most dangerous accidents to which women are subject. In some cases the discharge is slight, and easily checked; but in many others, it is profuse, frequently repeated, and, if timely means of relief be not employed, ends in the death of both the mother and child.

Uterine hemorrhage implies a separation of part of the ovum, and a laceration of the vessels which pass into it. This may be the effect of various causes, such as mechanical violence, plethora, delicacy of the vessels, partial spasmodic action about the os uteri, or implantation of part of the placenta over the os uteri. This last is the most serious of all the causes of hemorrhage, for it uniformly produces a great discharge, and there is very little chance of the woman being relieved by the powers of nature. It is obvious, that in this case, when the cervix uteri distends to a certain degree, a separation of the placenta must take place; and the more that the os uteri afterwards dilates, the greater must the separation and the hemorrhage be.

Hemorrhage may take place from these different causes, at any period of gestation; but the last one most frequently

operates in the end of the seventh, and course of the eighth month, though sometimes not till near the usual time of labour. The time of the attack, and the violence of the hemorrhage, depend very much upon the situation of the placenta, with regard to the os uteri.

There are two ways in which nature attempts to check hemorrhage; the first is, by inducing a state of weakness, or faintishness, which lessens the force of the circulation, and promotes the formation of coagula. This method generally succeeds, where there is only a small part of the decidua separated, and the placenta is not fixed over the os uteri. The second is, by exciting labour pains. Whenever the uterus is much injured, by any cause whatever, contraction begins. Profuse, or repeated hemorrhage, must tend, therefore, to bring on labour, and this is a most salutary law in the uterine economy. From these two resources of nature, it might be supposed, that there was little necessity for the interference of art. But it cannot be too strongly insisted on, that before sufficient injury be done to the uterus, to excite its contraction, the fibres may be so debilitated as to be unable to carry on the process of expulsion briskly; or granting, that delivery were to be accomplished, the constitution may, before that time, be irreparably injured.

The danger of uterine hemorrhage is to be estimated by its degree and obstinacy, by the effect produced on the system, and by the natural strength of the constitution. In a great many cases, a discharge of blood occurring in the seventh month of pregnancy, or afterwards, may be permanently checked. But whenever it is protracted, and frequently repeated, there is little ground to expect that the woman can be saved, otherwise than by delivery.

With regard to the treatment of this accident, I would beg to observe, that until symptoms of contraction of the uterus, or dilatation of the os uteri take place, our object must be simply to restrain hemorrhage. This is an axiom which, I presume, all experienced practitioners admit. The difficulty of accomplishing this object, must depend very much upon

the cause of hemorrhage, and the number and magnitude of the vessels which are opened. But in every case, the means are very much the same. They are similar to those employed for moderating the discharge during abortion. If the pulse be full, and there is reason to suppose that hemorrhage is connected with an overaction of the vessels, or is kept up by plethora, it will be proper to take away some blood from the arm; but in most other cases, this remedy is to be omitted. Digitalis may likewise, in such cases, be employed for a short time. I am informed that the acetate of lead given internally, in doses of two or three grains, has often checked hemorrhage. (t) The remainder of the treatment is applicable in every case, and consists in enjoining a state of strict rest in a recumbent posture; keeping the

(t) The preparations of lead, which were once employed in the practice of physic, fell into disrepute some years since, in consequence of several publications, which appeared nearly about the same time in Europe, giving an alarming representation of the properties of that mineral. We, undoubtedly, owe to professor Barton the revival of this medicine in the United States, and the removal of our prejudices respecting it. The influence of his name has, indeed, introduced it very generally into use, not only in the several species of hemorrhage, but also in many other diseases, and especially in the nervous and spasmodic affections. Of the efficacy of saccharum saturni in uterine hemorrhage, I must speak confidently from my own experience, having never resorted to it, except under circumstances the least favourable to its exhibition. This has been owing to my preference of a combination of opium and ipecacuanha, which I give in the proportion of half a grain of the former to two grains of the latter, once every two hours, or oftener, as the case may require. My confidence is so well founded in this remedy, that I have always felt an unwillingness to substitute any other in its place. Not a doubt, however, do I entertain of the utility of the acetate of lead in uterine hemorrhage. The testimony of so cool, so cautious, so deliberate an observer as Dr. Barton, whose scope of experience with it has been very wide, is alone satisfactory to me. But to those who are less acquainted than myself with the acuteness of the discernment, and the accuracy of the judgment of this truly philosophical physician, it may not be altogether improper to mention that his *original* account of the success of this medicine in uterine hemorrhage has been fully confirmed by the *subsequent* observations of a very large number of respectable practitioners throughout the country. The lead is given in combination with opium very much in the same proportions which I have recommended with regard to the ipecacuanha. Without the opium it is apt to operate painfully on the bowels. ED.

patient cool, by giving nothing that is warm, and diminishing the quantity of bed-clothes; giving anodynes occasionally, to abate irritation, or relieve cough, should it be present; applying cloths, wet with cold water, to the vulva; but especially by stuffing the vagina with a soft handkerchief, so completely as to favour the formation of coagula in the mouths of the vessels. This is to be retained until the discharge be checked. It should not be kept in constantly, lest the parts be irritated, but the nurse must be taught to use it in the absence of the practitioner; and if the hemorrhage be frequent, it is generally proper that it be introduced at night, and kept in till the morning. The vigour with which these means are to be used, and the time during which they are to be continued, must depend on the violence of the attacks, and the tendency which they have to return. Should the hemorrhage recur frequently, or the paroxysm be severe, there is little ground to expect that a cure can be obtained by the first method employed by nature; and we look forward to the second as the mean of saving the woman. By a continuance of the discharge, the pulse becomes small and feeble, and generally frequent, the face is pale, the lips white, and the other effects of loss of blood appear. Now in such circumstances, it is proper, occasionally to examine the state of the os uteri, and to watch carefully for the first appearance of pains. These, at first, are slight, and often continue trifling, until the woman dies; we are, therefore, not to delay interfering, in the expectation of the pains becoming strong or forcing, but must interpose whenever the os uteri is in such a state as to permit of the introduction of the hand without much force. M. M. Levret and Puzos divided floodings into two classes; those dependent on implantation of the placenta over the os uteri, and those produced by the separation of the decidua, or part of the placenta, that organ being fixed somewhere remote from the os uteri. In the first of these, they advised delivery; in the second, it was proposed to rupture the membranes, in order to make the uterus contract. But this advice is liable to many objections, and,

among others, to the capital one of uncertainty in its effect; for we cannot say what the result may be, or how long the uterus may be of contracting effectively, or if it may ever do so. On this account, I believe it is now the practice of every judicious accoucheur to trust entirely to delivery, disregarding this distinction of causes, except in so far as in the outset, it may enable him to form a better guess of the chance the patient has of getting well without manual interference.*

* Although I have said that we may wait safely until the os uteri begins to open, and asserted, that no woman can die from mere hemorrhage, before the state of the os uteri admit of delivery, I must yet add, on this important subject, that this state does not consist merely in *dilatation*, for it may be very little dilated, but in *dilatability*, and we may safely deliver whenever the hand can be introduced without much force. A forcible introduction of the hand on the first attack of hemorrhage, would, in many cases, be attended with the greatest danger, and in almost every case is improper and unnecessary. I have never yet seen an instance, where delivery was required during the first paroxysm, if the proper treatment was followed. Whether it may be required in a second or third attack, or even later, must depend upon the quantity and rapidity of the discharge, its effects, and the strength of the woman. But whenever we find the os uteri soften, and in any degree more open than in its usual state, and it admits the finger to be introduced easily within it, we may deliver safely; and if the hemorrhage be continuing, ought not to delay. This state will generally be found accompanied with obscure pains; but we attend less to the state of pains, than of discharge, in determining on delivery. The pains gradually increase for a certain period, and then go off. During their continuance, the os uteri dilates more; but if the hemorrhage have been or continues to be considerable, we must not wait until the os uteri be much dilated, as we then reduce the woman to great danger, and diminish the chance of her recovery. A prudent practitioner will not, on the one hand, violently open up the os uteri at an early period, but will use the plug, until the os uteri becomes soft and dilatable; and if the hemorrhage be not considerable, he will even, if the state of the patient allow him, wait until slight pains have appeared, or the os uteri begun sensibly to open without them; for he will recollect, that the more violence that is done to the os uteri, the greater is the risk of bad symptoms supervening. It is an error into which some have fallen, who look upon debility from discharge, as the only barrier to recovery. Violent delivery may produce inflammation, or a very troublesome fever. On the other hand, he will not allow his patient to lose much blood, or have many attacks; he will deliver her immediately, for he knows that whenever this is necessary it is easy, the os uteri yielding to his cautious endeavours. The hand being introduced, he ruptures the membranes, and turns the

The steps of delivery are very simple. The woman being placed on her left side, the hand is to be slowly introduced into the vagina, then cautiously through the os uteri; the membranes are to be torn, the hand carried on in search of the feet, which are to be brought down, and the delivery managed as in footling cases. The placenta is not to be extracted hastily, but, if hemorrhage succeed the birth of the child, the hand must be introduced in order to excite the uterine contraction, and the directions hereafter to be given attended to. It has been supposed by some, that even in profuse hemorrhages, delivery might often be avoided, and the result left to nature. Some rare and fortunate escapes have perhaps, seemed to favour this opinion; but from the general effects of delay, the principle must be considered as the most dangerous which can prevail in midwifery. Of this I am, from the testimony of others, and my own observation, so confident, that I forbear to say more upon the subject. For the satisfaction of the student, I shall sum up the doctrine in two remarks. 1st. That it is possible, by means of rest, plugging, and other means, to keep the woman safe, until the os uteri begins to dilate; 2d. That whenever the os uteri is in such a state of relaxation, and of dilatation, as to permit of being farther and sufficiently opened for the introduction of the hand, without violence, the delivery is no longer to be delayed, provided the hemorrhage still continue. If this last rule be neglected, such a degree of weakness may be induced, as will effectually prevent the recovery of the patient. On the other hand, if the os uteri be prematurely opened, and force employed, inflammation is apt to come on, and may prove fatal. Prudence must suggest the proper time to deliver: and to assist the judgment of the student, I will say, that it is safe to introduce the hand, when there is just a feeling of slight resistance, yielding perceptibly, and without much pain, to gentle efforts toward the introduction.

child. He will avoid temerity and rashness on the one hand, and timidity and procrastination on the other. As the subject is important, I have thought it necessary to add this note as a farther explanation of the practice.

After the delivery of the woman, she must be very carefully attended to, the strength supported, and every symptom watched. The danger is not over when the hemorrhage is stopped, for unless much attention be paid, the patient may yet die.* This subject will be resumed when we come to consider uterine hemorrhage occurring after delivery.

In consequence of a fall, or fright, or partial contraction of the uterine fibres, part of the placenta may be detached, but the blood may be retained within the uterus. Sometimes the fœtus dies, and the ovum remains for many weeks; when it is expelled, together with large coagula; or the effusion may be so small as to produce no detriment; but more frequently, pain is felt at the spot, when the accident happens, and afterwards a sensation like that preceding menstruation. The uterus enlarges sensibly, becomes rounder and firmer, and the belly swells, the strength sinks, and syncope may take place. Pains are excited, but gradually become weaker. They, however, operate so far on the os uteri, as to render delivery practicable.

SECTION THIRTY-SEVENTH.

Many women are subject, in the end of gestation, to pains about the back or bowels, somewhat resembling those of labour, but which, in reality, are not connected with it. These, therefore are called false pains. They sometimes only precede labour a few hours; but in many cases, they come on several days, or even some weeks, before the end of pregnancy, and may be very frequently repeated, especially during the night, depriving the woman of sleep. They are often confined altogether to the belly, shifting their place, and being very irregular both in their attacks and continuance. On other occasions, they occupy chiefly the back or hips, or upper part of the thighs. They even sometimes resemble, still more nearly parturient pains, in being at-

* For a more minute consideration of this subject, and the circumstances connected with it, I refer to my "Practical Observations on Uterine Hemorrhage."

tended with an involuntary effort on the part of the abdominal muscles, to press down, so as to make the woman suppose that she is about to be delivered. In other cases, they are attended with a discharge of watery fluid from the vagina. False pains may be occasioned by many causes: the most frequent are flatulence; a spasmodic state of the bowels, resembling slight colic; or irritation, connected with costiveness or diarrhœa; or nephritic affections, often accompanied with strangury. A sudden motion of the back, or unusual degree of fatigue, may cause a remitting pain in the back and loins; or getting suddenly out of bed when warm, and placing the feet on the cold floor, may have the same effect. A slight degree of lumbago may also resemble the parturient pains. Agitation of mind, or a febrile state of the body, or some irritation in the neighbourhood of the uterus, or some unusual motion of the child may produce an uneasy sensation in the uterus; and sometimes this is accompanied by a discharge of watery fluid from the vagina.

False pains may often be distinguished by their situation, as for instance, when they affect the bowels or kidneys, by their shifting their situation, by their duration, by their irregularities, and by the symptoms with which they are attended. But the best criterion is, that they seldom affect the os uteri, that part not being dilated during their continuance. It is necessary however to observe, that a dilated state of the os uteri does not always prove that the pains are those of labour, for it may be found prematurely dilated for a week or two before the proper term of labour, without any pain. (u) In this case, if the pains proceed from affections of the bowels, no effect is produced during the pain, in rendering the os uteri tense, or making it larger. On the other hand, it sometimes happens, that the fibres about the os uteri are

(u) In some cases the os tincæ would seem to possess the power of dilatation and contraction. I recently attended a woman who, for more than two weeks, continued to have uterine pains occasionally so strong as to induce me, under the suspicion of her being in labour, to make repeated examinations. To my surprise, I found the os tincæ sometimes quite contracted, and at other times dilated to more than an inch in diameter. Ed

prematurely irritated; and this state may be accompanied with pain, and with a perceptible change on the os uteri during a pain. This is a very ambiguous case; but we may be assisted in our judgment, by discovering that the term of utero gestation is not completed, that the os uteri is hard or thick, and the pains irregular. In all such cases, it is best to proceed on the supposition, that the woman is not actually in labour; for by letting her alone, she most likely will have a continuance of pain, terminating, it is true, in labour, but the process will be tedious and fatiguing; whereas, by suspending the action by an opiate, and if necessary by venesection, the woman may go on for some time longer, and will at all events have an easier delivery.

When the false pains are accompanied with a febrile state, or are very distressing during the night, it will be proper to detract blood, and afterwards give an anodyne. In all other cases, it is generally sufficient to keep the woman in a state of rest, prescribe an opiate, and if necessary, open the bowels by means of a clyster.

BOOK II.

Of Parturition.

CHAPTER I.

Of the Classification of Labours.

LABOUR may be defined to be the expulsive effort made by the uterus for the birth of the child, after it has acquired such a degree of maturity, as to give it a chance of living, independently of its uterine appendages.

I propose to divide labours into seven classes; but I do not consider the classification to be of great importance, nor one mode of arrangement much better than another, for the purposes of practice, provided proper definitions be given, and plain rules delivered, applicable to the different cases.

The classes which I propose to explain are,

Class I. Natural Labour, which I define to be labour taking place at the end of the ninth month of pregnancy; the child presenting the vertex, and the forehead being directed at first toward the sacro-iliac symphysis; a due proportion existing betwixt the size of the head, and the capacity of the pelvis; the pains being regular and effective; the process not continuing beyond twenty-four hours, seldom above twelve, and very often not for six. No morbid affection supervening, capable of preventing delivery, or endangering the life of the woman.

This comprehends only one order.

Class II. Premature Labour, or labour taking place considerably before the completion of the usual period of utero-gestation, but yet not so early as necessarily to prevent the child from surviving.

This comprehends only one order.

Class III. Preternatural Labours, or those in which the presentation, or position of the child is different from that which occurs in natural labour; or in which the uterus contains a plurality of children.

This comprehends seven orders.

Order 1. Presentation of the breech.

Order 2. Presentation of the inferior extremities.

Order 3. Presentation of the superior extremities.

Order 4. Presentation of the back, belly, or sides of the child.

Order 5. Malposition of the head.

Order 6. Presentation of the funis.

Order 7. Plurality of children.

Class IV. Tedious Labour, or labour protracted beyond the usual duration; the delay not caused by the malposition of the child, and the process capable of being finished safely, without the use of extracting instruments.

This comprehends two orders.

Order 1. Where the delay proceeds from some imperfection or irregularity of muscular action.

Order 2. Where it is dependent principally on some mechanical impediment.

Class V. Laborious or Instrumental Labour. Labour which cannot be completed without the use of extracting instruments; or altering the proportion betwixt the size of the child, and the capacity of the pelvis.

This comprehends two orders.

Order 1. The case admitting the use of such instruments as do not necessarily destroy the child.

Order 2. The obstacle to delivery being so great, as to require that the life of the child should be sacrificed for the safety of the mother.

Class VI. Impracticable Labour. Labour in which the child, even when reduced in size, cannot pass through the pelvis.

This comprehends only one order.

Class VII. Complicated Labour. Labour attended with

some dangerous or troublesome accident or disease, connected in particular instances with the process of parturition.

This comprehends six orders.

Order 1. Labour complicated with uterine hemorrhage.

Order 2. Labour complicated with hemorrhage from other organs.

Order 3. Labour complicated with syncope.

Order 4. Labour complicated with convulsions.

Order 5. Labour complicated with rupture of the uterus.

Order 6. Labour complicated with suppression of urine, or rupture of the bladder.

Calculations have been made, of the proportion which these different kinds of labour bear to each other in practice. Thus Dr. Smellie supposes, that out of a thousand women in labour, eight will be found to require instruments, or to have the child turned, in order to avoid them; two children will present the superior extremities; five the breech; two or three the face; one or two the ear; and ten will present with the forehead turned to the acetabulum.

Dr. Bland has, from an hospital register, stated the proportion of the different kinds of labour, to be as follows: of 1897 women, 1792 had natural labour. Sixty-three, or one out of 30, had unnatural labour; in 18 of these, the child presented the feet, in 36, the breech, in 8, the arm, and in 1 the funis. Seventeen, or one out of 111 had laborious labour; in 8 of these, the head of the child required to be lessened, in 4 the forceps were employed, and in the other 5, the face was directed toward the pubis. Nine, or one in 210, had uterine hemorrhage before or during labour. It is evident, however, that this register cannot form a ground for general calculation; and the reader will perceive, that the number of crotchet cases exceeds those requiring the forceps, which is not observed in the usual course of practice.

We cannot form an estimate of the proportion of labours, with much accuracy, from the practice of individuals, as one man may, from particular circumstances, meet with a greater number of difficult cases, than is duly proportioned to the number of his patients. Thus, Dr. Hagen of Berlin says, that out of 350 patients, he employed the forceps 93 times, and the crotchet in 28 cases; 26 of his patients died. Dr. Dewees again, of Philadelphia, says, that in more than 3000 cases, he has not met with one requiring the use of the crotchet.

CHAPTER II.

Of Natural Labour.

SECTION FIRST.

PREVIOUS to the accession of labour, we observe certain precursory signs, which appear sometimes for several days, oftener only for a few hours before pains be felt. The uterine fibres begin slowly and gradually to contract or shorten themselves, by which the uterus becomes tenser and smaller. It subsides in the belly, the woman feels as if she carried the child lower than formerly, and thinks herself slacker and smaller than she was before. For some days before gestation be completed, she in many cases is indolent and inactive, but now she often feels lighter and more alert. At the same time that the uterus subsides, the vagina and os uteri are found to secrete a quantity of glairy mucus, rendering the organs of generation moister than usual; and these are somewhat tumid and relaxed, the vagina especially becoming softer and more yielding. These changes are often attended with a slight irritation of the neighbouring parts, producing an inclination to go to stool, or to make water frequently, and very often griping precedes labour, or attends its commencement.

The intention of labour is, to expel the child and secundines. For this purpose, the first thing to be done, is to dilate, to a sufficient degree, the os uteri, so that the child may pass

through it. The next point to be gained, is the expulsion of the child itself; and last of all, the fœtal appendages are to be thrown off. The process may therefore be divided into three stages. The first stage is generally the most tedious. It is attended with frequent, but usually short pains, which are described as being sharp, and sometimes so severe, as to be called cutting or grinding. They commonly begin in the back, and extend toward the pubis or top of the thighs; but there is, in this respect, a great diversity with different women, or the same woman at different times. Sometimes the pain is felt chiefly or entirely in the abdomen, the back being not at all affected during this stage; and it is generally observed that such pains are not so effective as those which affect the back. In other cases, the pain is confined to the small of the back, and upper part of the sacrum; and is either of a dull aching kind, or sharp and acute, and, in some instances is attended with a considerable degree of sickness, or tendency to syncope. The most regular manner of attack, is for the pains to be at first confined to the back, descending lower by degrees, and extending round to the belly, pubis, or top and fore part of the thighs, and gradually stretching down the back part of the thighs, the fore part becoming easy; occasionally one thigh alone is affected. At this time also, one of the legs is sometimes affected with cramp. The duration of each pain is variable; at first it is very short, not lasting above half a minute, perhaps not so long, but by degrees it remains longer, and becomes more severe. The aggravation, however, is not uniform, for sometimes in the middle of the stage, the pains are shorter, and more trifling than in the former part of it. During the intermission of the pains, the woman sometimes is very drowsy, but at other times is particularly irritable and watchful.

The pains of labour often begin with a considerable degree of chillness; or an unusual shaking or trembling of the body, with or without a sensation of coldness. These tremors may take place, however, at any period of labour; they may usher in the second stage, and be altogether wanting during the

first; or they may not appear at all, even in the slightest degree; or they may be present only for a very short time. They do not generally precede the uterine pain, but may be almost synchronous in their attack: in other cases, they do not appear until the pain has lasted for a short space of time; but whenever they do come on, it is usual for the uterine pain to be speedily removed. Hence it might be supposed, that they should materially retard labour, but this is far from being always the case. In degree, they vary from a gentle tremor to a concussion of the frame, so violent as to shake the bed on which the patient rests, and even to bear some resemblance to a convulsion. The stomach also sympathises with the uterus during this stage, the patient complaining of a sense of oppression; sometimes of sickness, or even of vomiting, which is considered as a good symptom, when it does not proceed from exhaustion; or of a feeling of sinking or faintness, but the pulse is generally good. These symptoms, however, are often wanting, or attack at different periods of labour: like the rigors, they may be absent during the greatest part of the first stage, or until its end, ushering in the second; but in general, they are confined to the first stage, going off when the os uteri is fully dilated. In consequence partly of those feelings, partly of the anxiety and solicitude connected with a state of suffering and danger, and partly from the pains being free from any sensation of bearing down, the woman, during this stage, is apt to become desponding, and sometimes fretful. She supposes that the pains are doing no good; that she has been, or is to be, long in labour; that something might be done to assist her, or has been done, which had better have been avoided; and that there is a wrong position of the child, or a deficiency of her own powers.

When the pains of labour begin, there is an increased discharge of mucus from the vagina, which proceeds from the vaginal lacunæ, and from the os uteri. It is glairy, whitish, and possesses a peculiar odour. When the os uteri is considerably dilated, though sometimes at an earlier period, there is, in consequence of the separation of the deci-

dua, a small portion of blood discharged, which gives a red tinge to the mucus.

The distension of the os uteri is often attended with irritation of the neighbouring parts, the woman complaining of a degree of strangury; or having one or two stools with or without griping, especially in the early part of the stage. The pulse generally is somewhat accelerated.

The os uteri being considerably dilated, the second stage begins. The pains become different, they are felt lower down, they are more protracted, and attended with a sense of bearing down, or an involuntary desire to expel or strain with the muscles, and this desire is very often accompanied with a strong inclination to go to stool. A perspiration breaks out, and the pulse, which, during the first stage, beat rather more frequently than usual, becomes still quicker; the woman complains of being hot, and generally the mouth is parched. Soon after the commencement of this stage, it is usual for the liquor amnii to be discharged. This is often followed by a short respite from pain, but presently the efforts are redoubled. Sometimes there is no cessation, but the pains immediately become more severe, and sensibly effective. The perinæum now begins to be pressed outward, and the labia are put upon the stretch. The protrusion of the perinæum gradually increases, but it is not constant; for when the pain goes off, the head generally recedes a little, and the perinæum is relaxed. Presently the head descends so low, that the parts are kept permanently on the stretch, and the anus is carried forward. Then the vertex pressing forward, the labia are elongated, and the orifice of the vagina dilated. Last of all, the margin of the perinæum slips over the forehead of the child, and the head is delivered. This event is accomplished with very severe suffering; but immediately afterwards, the woman feels easy, and free from pain. In a very little time, however, the uterus again acts, and the rest of the child is expelled, which completes the second stage of labour. The expulsion of the body is generally accomplished very easily, and quickly; but

sometimes the woman suffers several strong and forcing pains, before the shoulders are expelled. The birth of the child is succeeded, after a short calm, by a very slight degree of pain, which is consequent to that contraction which is necessary for the expulsion of the placenta. This expulsion is accompanied and preceded by a slight discharge of blood, which is continued, but in decreasing quantity, for a few days, under the name of the red lochia.

SECTION SECOND.

The duration of this process, and of its stages, varies not only in different women, but in the same individual in successive labours; for although some, without any mechanical cause, be uniformly slow or expeditious, others are tedious in one labour, and perhaps extremely quick in the next, and this variation cannot be foreseen from any previous state of the system. A natural labour ought to be finished within twenty-four hours after the first attack of pain, provided the pains be truly uterine, and are continued regularly; for occasionally, after being repeated two or three times, they become suspended, and the person keeps well for many hours, after which the process begins properly. In such cases, the labour cannot be dated from the first sensation of pain, nor deemed tedious. The greatest number of women do not complain for more than twelve hours, many for a much shorter period, and some for not more than one hour. Few women call the accoucheur, until, from the regularity and frequency of the pains, they are sure that they are in labour, and feel themselves becoming worse. As the celerity of the process cannot be previously determined, many women thus bear their children alone, becoming rapidly and unexpectedly worse. On an average, it will be found, that in natural labour, the accoucheur is not called above four hours previous to delivery.

The regularity and comparative length of the different stages is also various; but it will be generally observed, that when a woman has a natural labour protracted to its utmost

extent, the delay takes place in the first stage; and in those cases where the second stage is protracted, the delay occurs in the latter end of that stage. In most cases, the first stage is triple the length of the second. The first stage may be tedious, from the pains not acting properly on the os uteri, or being weak and inadequate to the effect intended, or becoming prematurely blended with the second stage; that is to say, bearing down efforts being made before the os uteri be much dilated. Various circumstances may conspire to produce this delay, such as debility of the uterus, rigidity of its mouth, premature evacuation of the water, improper irritation, injudicious voluntary efforts, &c. The second stage may be tedious, from irregularity of the uterine contraction, or from a suspension of the bearing down efforts, or from the head not turning into the most favourable direction, or from the rigidity of the external organs.

These, and other causes, which will hereafter be considered, may not only protract the labour, but may even render it so tedious, as to remove it from the class of natural labours altogether. It is a general opinion, that a first labour is always more lingering than those which succeed. We should be led, however, to suppose, that parturition, being a natural function, ought to be as well and as easily performed the first time, as the fifth; the process not depending upon either habit or instruction. But we do find, that here, as in many other cases, popular opinion is founded on fact; for although in several instances, a first labour is as quick as a second, yet in general, it is longer in both its stages. This, perhaps, depends chiefly on the facility with which the different soft parts dilate after they have been once fully distended. Some have attributed the pain of parturition to mechanical causes, ascribing it to the shape of the pelvis, and the size of the child's head. But this is not the case, for, in a great majority of cases, the pelvis is so proportioned, as to permit the head to pass with great facility. The pain and difficulty attending the expulsion of the child in natural labour, are to be attributed to the

forcible contraction of the sensible fibres of the uterus, and to the dilatation of the os uteri and vulva, in consequence thereof. Women will therefore, *ceteris paribus*, suffer in proportion to the sensibility of the organs concerned, and the difficulty with which the parts dilate. In proportion as we remove women from a state of simplicity to luxury and refinement, we find that the powers of the system become impaired, and the process of parturition is rendered more painful. In a state of natural simplicity, women in all climates bear their children easily, and recover speedily; (1)

(1) "The Greenlanders, mostly, do all their common business just before and after their delivery; and a still-born or deformed child is seldom heard of." Crantz' History of Greenland, vol. I. p. 161.

Long tells us, that the American Indians, as soon as they bear a child, go into the water and immerse it. One evening he asked an Indian where his wife was; he replied, "he supposed she had gone into the woods, to set a collar for a partridge." In about an hour she returned with a new born infant in her arms, and coming up to me, said, in Chippoway, "Oway saggonash, payshik shomagonish;" or, "Here Englishman is a young warrior." Travels, p. 59.

"Comme les accouchemens sont tres-aises en Perse, de meme que dans les autres pais chauds de l'Orient, il n'y a point de sages femmes. Les parentes agées et les plus graves, font cet office, mais comme il n'y a gueres de vieilles matrones dans le haram, on en fait venir dehors dans le besoin." Voyages de M. Chardin, tom. VI. p. 230.

Lempriere says, "Women in this country, (Morocco,) suffer but little inconvenience from child bearing. They are frequently up next day, and go through all the duties of the house with the infant on their back." Tour, p. 328.

Winterbottom says, that, "with the Africans, the labour is very easy, and trusted solely to nature, nobody knowing of it till the woman appears at the door of the hut with the child." Account of Native Africans, &c. vol. II. p. 209.

The Shangalla women "bring forth children with the utmost ease, and never rest or confine themselves after delivery; but washing themselves and the child with cold water, they wrap it up in a soft cloth, made of the bark of trees, and hang it up on a branch, that the large ants with which they are infested, and the serpents, may not devour it." Bruce's Travels, vol. II. p. 553.

In Otaheite, New South Wales, Surinam, &c. parturition is very easy, and many more instances might, if necessary, be adduced. We are not however to suppose, that in warm climates women do not sometimes suf-

but this is more especially the case in those countries where heat conspires to relax the fibres. The quality or quantity of the food has much less influence than the general habit of life, upon the process of parturition. In a savage state, women, though living abstemiously, and often compelled to work more than men, bear children with facility; whilst in this country, women who live on plain diet are not easier than those who indulge in rich viands.

SECTION THIRD.

The existence and progress of labour, and the manner in which the child is placed, are ascertained by examination *per vaginam*. For this purpose the woman ought to be placed in bed, on her left side,* with a counterpane thrown over her, if she be not undressed. The hand is to be passed along the back part of the thighs to the perinæum, and thence immediately to the vagina, into which the fore finger is to be introduced. It never ought to be carried to the fore part of the vulva, and from that back to the vagina. The introduction is to be accomplished as speedily and gently as possible, and the greatest delicacy must be observed. The information which we wish to procure, is then to be obtained by a very perfect, but very cautious examination of the os uteri, and presenting part of the child, which gives no pain, and consequently removes the dread which many women, either from some misconception, or from previous harsh treatment, entertain of this operation.

fer materially. In the East Indies, “ many of the women lose their lives “ the first time they bring forth.” Bartolomeo’s Voyage, chap 11.

Undomesticated animals generally bring forth their young with considerable ease, but sometimes they suffer much pain, and, when domesticated, occasionally lose their lives.

* A standing or half sitting posture has been proposed by some, and may, doubtless in certain diseases of the uterus be proper, that it may by its weight, come within reach. Sometimes in the early months of pregnancy, it is allowable from the same motives, but during labour it is not often that the uterus is so high that the examination cannot be performed in a recumbent posture.

When a woman is in labour, we should, if the pains be regular, propose an examination very soon after our arrival.

It is of importance that the situation of the child be early ascertained, and most women are anxious to know what progress they have made, and if their condition be safe. As it is usual to examine during a pain, many have called this operation "taking a pain;" but there is no necessity for giving directions respecting the proper language to be used, as every man of delicacy and sense will know how to behave, and can easily, through the medium of the nurse, or by turning the conversation to the state of the patient, propose ascertaining the progress of the labour. Some women from motives of false delicacy, and from not understanding the importance of procuring early information of their condition, are averse from examination until the pains become very severe. But this delay is very improper, for, should the presentation require any alteration, this is easier effected before the membranes burst than afterwards. When the presentation is ascertained to be natural, there is no occasion for repeated examinations in the first stage, as this may prove a source of irritation, and, should the stage be tedious, may be a mean of exciting impatience. In the second stage, the frequency of examination must be proportioned to the rapidity of the process.

In order to avoid pain and irritation, it is customary to anoint the finger with oil or pomatum; but unless this practice be used as a precaution to prevent the action of morbid matter on the skin, it is not very requisite, the parts being, in labour, generally supplied with a copious secretion of mucus. It is usual for the room to be darkened, and the bed curtains drawn close, during an examination; and the hand should be wiped with a towel, under the bed-clothes, before it be withdrawn. The proper time for examining, is during a pain; and we should begin whenever the pain comes on. We thus ascertain the effect produced on the os uteri, and, by retaining the finger until the pain goes off, we determine the degree to which the os uteri collapses, and the precise

situation of the presenting part, which we cannot do during a pain, if the membranes be still entire, lest the pressure of the finger should, were they thin, prematurely rupture them.

An examination should never, if possible, be proposed or made, whilst an unmarried lady is in the room, but it is always proper that the nurse or some other matron be present.

The existence of labour is ascertained by the effects of the pains on the os uteri; and its progress, by the degree to which it is dilated, and the position of the head with regard to different parts of the pelvis.

Before labour begins, the os uteri is generally closed, and directed backwards toward the sacrum. When we examine in the commencement of labour, the os uteri is to be sought for near the sacrum, at the back part of the pelvis, whilst between that spot and the pubis, we can pass the finger along the fore part of the cervix uteri. On this the presenting part of the child rests, so that, in natural labour, it assumes somewhat the shape of the head, and for the sake of distinction, I shall call it the uterine tumour. In some, it is so firmly applied to the head, and so tense, that a superficial observer would take it for the head itself. In this case, the labour often is lingering. This tumour, or portion of the uterus, is broad in the beginning of labour, but becomes narrower as the os uteri dilates, until at last it is completely effaced, the head either naked or covered with the membranes, occupying the vagina. The breadth of this portion of the uterus, therefore, as well as the examination of the os uteri, will serve to ascertain the state of the labour.

The os uteri gradually dilates by the pains of labour, but this dilatation is easier effected in some cases than in others. In some, though the pains have lasted for many hours, and have been frequent, the os uteri will be found still very little opened. In others, a very great effect is produced in a short time; nay, we even find, that the os uteri may be partly dilated, without any pain at all. We cannot exactly foretel the effect which the pains may have, by any general rule.

We find, in different women, the os uteri in very opposite

states. In some it is thick, soft, and protuberant; in others, thin and tubulated; sometimes it is not prominent, but the edges of the mouth are on the same plane, like the mouth of a purse: these edges may be thin or thick, and both these states may exist with hardness or softness of the fibre. In some cases, they seem to be swelled, as if they were œdematous, and this state is often combined with œdema of the vulva. Now, of these conditions, some are more favourable than others; a rigid os uteri, with the lips either flat or prominent, is generally a mark of slow labour, for as long as this state continues, dilatation is tardy; a thick œdematous feel of the os uteri is also unfavourable; and usually a projecting or tubulated mouth, especially if the margin be thick and hard,* is connected with a more tedious labour than where the os uteri is flat. In some cases of slow labour, the os uteri for many hours is scarcely discernible, resembling a dimple or small hard ring, perfectly level with the rest of the uterus. But although these observations may assist the prognosis, yet we never can form an opinion perfectly correct; for it is wonderful, how soon a state of the os uteri, apparently unfavourable, may be exchanged for one very much the reverse, and the labour may be accomplished with unexpected celerity. Our prognosis, therefore, should be very guarded. When the pains produce little apparent effect on the os uteri, when they are slight and few, and when the orifice of the uterus is hard and rigid, or thick and puckered, during a pain, there is much ground to expect that the labour may be lingering; on the other hand, when the pains are brisk, the os uteri thin and soft, we may expect a more speedy delivery: but as in the first case, the unfavourable state of the os uteri may be unexpectedly removed, so in the second, the pains may become suspended or irregular, and disappoint our hopes. The os uteri seldom dilates equally in given times, but is more slow at first in opening than afterwards. It has been supposed, that if it require three hours

* If the margin be thin and soft, the os uteri sometimes, in the course of an hour, loses its projecting form, and becomes considerably dilated.

to dilate the os uteri one inch, it will require two to dilate it another inch, and other three to dilate it completely. This calculation, however, is subject to great variation, for in many cases, though it require four hours to dilate the os uteri one inch, a single hour more may be sufficient to finish the whole process.

The os uteri is, in the beginning of labour, generally pretty high up; but as the process advances, the uterus descends in the pelvis, along with the head, and, in proportion as it descends, the os uteri dilates, whilst the uterine tumour diminishes in breadth. Should the os uteri remain long high, even although it be considerably dilated, but more especially if it be not, there is reason to suppose that the labour will be continued still for some time. On the other hand, should the uterus descend too rapidly, there may be a species of prolapsus induced, the os uteri appearing at the orifice of the vagina. This state is generally attended with premature bearing down pains, and indicates a painful, and rather tedious labour.

The protrusion of the membranes, and discharge of the liquor amnii, ought to bear a certain relation to the advancement of labour. Whilst the os uteri is beginning to dilate, the membranes have little tension; they scarcely protrude through the os uteri, until it be considerably opened. But in proportion as the dilatation advances, and the pains become of the pressing kind, the membranes are rendered more tense, protruding during a pain, and becoming slack, and receding when it goes off. In some cases, by examination, we find the membranes forced out very low into the vagina, like a segment of a bladder, tense and firm, during a pain, but disappearing in its absence. Sometimes, although the head be so high as not to touch the perinæum, the membranes protrude the perinæum, and the fæces are evacuated or pressed out, as if the head were about to be expelled. When the membranes burst, the head is in such cases often delivered in a few seconds; but the pains may remit for a short time, and the woman be easier than formerly. The protrusion of the

membranes, which has been described by some as constituting a part of a natural labour, is by no means an universal occurrence, for in numerous instances the membranes protrude very little, and form scarcely a perceptible bag in the vagina. When the pains have acted some time on the membranes, pushing the liquor amnii against them, and especially when they become pressing, the membranes burst, and the water escapes, sometimes in a considerable quantity; but in other cases, very little comes away, the head occupying the pelvis so completely, that most of the water is retained above it, and is not discharged, until the child be born. If there be great irregularity in the degree to which the membranes protrude, there is no less in the period at which they break. In some cases, from natural feebleness or thinness, they break very early, and the liquor amnii comes away slowly. Sometimes they break in the middle or latter end of the first stage; in the commencement of the second; or not until the very end, when the head is about to be born. The opening is sometimes very large, and the head enlarging it, passes through it; at other times it is small, and the membranes are not perforated by the head, but they come along with it like a cap or cover. By examination, we ascertain the state of the membranes, and may be assisted in our judgment of the progress of the labour. When the membranes feel tense, and are protruded during a pain, we may be sure that the action of the uterus is brisk and good. When much water is collected beneath the head, forming a pretty large bag in the vagina; or when, during the pain, there is a tense protrusion of the membranes, though they be flat, forming a small segment of a large circle, we may expect, that if the pains continue as they promise to do, the membranes will soon burst, and the pains become more pressing. If during each pain, after the rupture, a quantity of water come away, it is probable, that whenever the uterus is pretty well emptied of the fluid, it will contract more powerfully. Should the membranes break when the os uteri is not fully opened, perhaps only half dilated, we may if there be a large discharge, ex-

pect a brisker action, and that the full dilatation of the os uteri will be soon accomplished; but if the water only ooze away, and the pains become less frequent, and not more severe, the labour may probably be protracted for some time.

In the first stage of labour, the head will be found placed obliquely along the upper part of the pelvis, with the vertex directed toward one of the acetabula. The finger can easily ascertain the sagittal, and afterwards the lambdoidal suture; the sagittal suture is the point from which we set out, and, if the finger is readily led to the angle formed by the posterior edges of the parietal bones, we may be sure that the presentation is favourable. If on the other hand, we can feel the anterior fontanelle, the vertex is generally directed to the sacro-iliac articulation. When the pelvis is well formed, and the cranium of due size, the head may commonly be felt in every stage of labour; but in some cases, even although the pelvis be ample, it is not easily touched for some time. Such instances, however, are rare; and whenever we are long of feeling the presentation, and do not discover a round uterine tumour, we may suspect that some other part of the child than the head presents. Even in the end of pregnancy, and long before labour begins, the head can usually be discovered resting on the distended cervix uteri; but different circumstances may for a time prevent it from being felt, the head perhaps in some cases, as from a fall for instance, being for a short time displaced towards one side.

In proportion as the head descends in the pelvis, the vertex is turned forward; so that, when the whole head has entered the pelvis, the face is thrown into the hollow of the sacrum, and the sagittal suture rests on the perinæum, whilst the occiput is placed under the symphysis pubis, or on its inside.

When the pelvis is well formed, the head generally descends without much change of the scalp; but when it is contracted, or the head rests long on the perinæum, the scalp is either wrinkled, or protruded like a tumour filled with blood. When the vertex is turned round towards the pubis, and is near the orifice of the vagina, we may conclude that the

most tedious part of the labour is over. In many cases, one or two pains are sufficient to conclude the process. Should the perinæum become stretched, and the anus be carried a little forward, we may expect that the delivery is near at hand. But if the head remain for a time in this position, without any protrusion of the perinæum, and without much feeling of bearing down with the pains, it is possible that the woman may still remain for a considerable time undelivered.

By examination, we ascertain the presentation, and the progress which the labour has made; but in forming an opinion respecting the probable duration of the process, we must be greatly influenced by the state of the pains, and in part also by our knowledge of former labours, if the woman have born many children. The different stages of labour are generally marked by a different mode of expressing pain. In the first stage, the pains are sharp, and the woman either moans or frets, or sometimes bears in silence. The second stage is marked by a sound, indicating a straining exertion, a kind of protracted groan, so that, by the change of the cry, a practitioner may often determine the stage of the labour. Sometimes in this stage, the woman clinches her teeth, or holds in her breath, so that she is scarcely heard to complain. In the moment of expelling the head, some women are quite silent, or utter a low groan, others scream aloud. When the pains in the first stage are increasing in frequency, in severity and in duration; and when they are accompanied with a corresponding dilatation of the os uteri, and especially when it, together with the head, gradually descends, the prognosis is very favourable. When the pains, after the os uteri is considerably dilated, become forcing, with an inclination to void the urine or fæces, and when these pains are accompanied with a full dilatation of the os uteri, the head at the same time descending lower, and the vertex beginning to turn round, we may look for a speedy delivery. But if the pains in the first stage be weak and few, and occur at long intervals, or, though not unfrequent, if they last only for a few seconds, and especially, if at the same time the os uteri be high up, or hard, or thick, we may conclude that the

process is not likely to be rapid. If, when the os uteri is little dilated, there be an inclination to bear down, the labour is generally slow, and hence all attempts to press with the abdominal muscles are improper; for whether these be made voluntarily or involuntarily, they, during this stage, add to the suffering, fatigue the woman, produce a tendency to prolapsus uteri, so that, in some instances, the os uteri is forced to the orifice of the vagina, and render the labour always slow and severe.

When the head is brought so low as to protrude the perinæum, the pains generally become more frequent and severe, and very soon effect the expulsion. But, if they be forcing, and propel the head considerably each time, but it recedes completely thereafter, it is likely that the delivery of the head will be difficult and painful; for in some cases, the external parts are long of yielding, and require repeated efforts to distend them before the head can safely be expelled.

Sometimes the pains, after beginning regularly and briskly, become suspended, or less effective, and this alteration cannot be foreseen. It is a popular opinion, that if a woman be not delivered within twelve hours after she is taken ill, the labour will become brisker at the same hour at which it began, that is to say, twelve hours after its commencement; and this opinion is, in many instances, countenanced by fact. In other cases, the labour becomes decidedly brisker six hours after its commencement. Most women begin to complain during the night, or early in the morning, and a great majority are delivered betwixt twelve at night and twelve o'clock noon.

SECTION FOURTH.

Different attempts have been made to explain why labour commenced at the end of the ninth month of pregnancy. The mysterious power of numbers, the influence of the planets, the distension of the uterine fibres, the pressure of the child upon the developed cervix and os uteri, have all in succession been enumerated, as affording a solution of

the question. It can serve no good purpose to enter into the investigation. We know, that whenever the process of utero-gestation is completed, the womb begins to contract. If, by any means, this process could be protracted, then labour would be kept off; and, on the other hand, if this process be stopped prematurely, either from some peculiarity connected with it, by which it is completed earlier than usual, or, from being interrupted by extraneous causes, acting either on the uterus, or by killing the child, then contraction does very soon commence. The immediate cause of the delivery of the child has been attributed to efforts made by the fœtus itself, the expulsive force of the abdominal muscles, or the contraction of the uterus. The first is fully set aside, by our finding that the fœtus, when dead, is born *cæteris paribus*, as easily as when it is alive and active. That the muscles alone cause the expulsion of the child, is disproved, by observing, that in the early part of labour they are perfectly quiescent, and no voluntary effort made with them is attended with any good effect. That the delivery is in a great measure owing to the action of the uterus, is proved by observing, that the uterus contracts in proportion as the delivery advances, and when the child is born, it is found to be very greatly diminished in size. But we have a still more positive proof of this, in attempting to turn the child, for then we feel very powerfully the action of the uterus, and the efforts which it makes to expel its contents. It is not just, however, to consider the action of the womb itself, as the sole agent in parturition; for in the second stage, the abdominal muscles do assist in the expulsion, not only by supporting the uterus, and thus enabling it to contract better, but also directly, by endeavouring to force the uterus, and consequently its contents, down through the pelvis. Two purposes are intended by the uterine action; the first is to open the os uteri, the second to propel the fœtus through it. Whilst, then, the fibres of the uterus itself contract, those of the os uteri must dilate, and, in proportion as the fœtus advances through the pelvis, the uterine fibres

must shorten themselves. Thus the uterine cavity is gradually diminished, so that the placenta can very easily, by a continuation of the same process, be thrown off; and the uterine vessels having their diameter greatly lessened, hemorrhage is prevented after the separation of the placenta.

Parturition, then, is a muscular action, and we might in one view conceive that it should be most speedy and easy in those who possessed a powerful muscular system, and great vigour. But this is far from being the case, for the process is tedious or speedy, easy or difficult, according to the relation which the power bears to the obstacle to be overcome. Now in many weak and debilitated women, the parts very easily relax and dilate, and a very small power is required to complete the expulsion; whilst we often find, that, those who possess a tense fibre, and great strength of the muscular system, accomplish the dilatation of the os uteri, not without much pain, and repeated efforts.

SECTION FIFTH.

Women in a state of nature make little preparation for their delivery, and conduct the process of parturition with little ceremony. They retire to the woods, or seclude themselves in a hut or bower, until they bear the child; after which, if the religious custom of their country do not require their separation for a time, they return to their usual mode of living.

In Europe, we find that the process of parturition is conducted with more care, and is supposed to require greater preparation. Different countries have different customs in this respect. In some, women are delivered upon a chair of a particular construction; in others, seated on the lap of a female friend. Some women use a little bed, on which they rest, until the process be completed; and others are delivered on the bed on which they usually sleep. This last, for many reasons, is the best and most proper practice; but in order to prevent the bed from being spoiled, or wet with the liquor amnii or blood, and also from other motives of com-

fort, it is usual to make it up in a particular manner. The mattress ought to be placed uppermost, and a dressed skin, or folded blanket, placed on that part of it on which the breech of the woman is to rest. The bed is then to be made up as usual; after which, a sheet folded into a breadth of about three feet, is put across the under fold of the bed-sheet. This is intended to absorb the moisture; and after delivery, if not during labour, that part which is wet is to be drawn completely away, so that a dry portion may be brought under the woman. This arrangement is generally attended to by the nurse, whenever labour begins. When the pains begin, the woman generally dresses in dishabille; but when the process is considerably advanced, it is necessary to undress, and lie in bed. Some at this time put on a half shift, that is to say, one that does not reach below the waist, so that it is not liable to be wet. Others are satisfied with having the shift pushed up over the pelvis, so as to be kept dry; its place, in either case, is supplied with a petticoat. These, and other circumstances relating to dress and to the quantity of bed-clothes, must be determined by the woman herself, and the season of the year.

It is of consequence that the room be not overheated by fire, or the woman kept too warm with clothes. Heat makes her restless and feverish, adds to the feeling of fatigue, and often, by rendering the pains irregular or ineffective, protracts the labour. No more people should be in the room than are absolutely necessary. The nurse and one female friend are perfectly sufficient for every good purpose; and a greater number, by their conversation, disturb the patient, or, by their imprudence, may diminish her confidence, in her own powers, and also in her necessary attendants. The mind, in a state of distress, is easily alarmed; and therefore whispering, and all appearance of concealment, ought to be prohibited in the room.

If the woman be disposed to sleep betwixt the pains, she ought not to be disturbed, but allowed to indulge in repose.

If she have not this inclination, and be not fatigued, cheerful conversation, upon subjects totally unconnected with her situation, will be very proper.

Women have seldom an inclination for food, whilst they are in labour, and, if the process be not long protracted, there is no occasion for it. If, however, the patient have a desire to eat, she may have a little tea or coffee, with dry toast, or a little soup or some panado; but every thing which is heavy or difficult of digestion must be avoided, lest she be made sick and restless, or have her recovery afterwards interrupted.

Stimulants and cordials, such as spiced gruel, cinnamon water, wines and possets, were at one time very much employed, but now are deservedly abandoned by those who follow the dictates of nature. Given in liberal doses, they are productive of great danger, disposing to fever or inflammation after delivery; and in smaller doses, they disorder the stomach, and often, instead of forwarding, retard the labour. If, however the woman be weak, or the process tedious, then a small quantity of wine, given prudently, may be of considerable advantage.

Some women wish to keep out of bed as much as possible, in order that labour may be forwarded by walking about: others have the same desire, from feeling easier when they are sitting. In this respect, they may be allowed to please themselves, but they must neither be encouraged nor permitted to walk about so much or so long as to occasion fatigue.

The urine ought to be regularly and frequently evacuated, and for that purpose, the practitioner should occasionally leave the room. If the woman be costive, and the rectum distended with fæces, a clyster or suppository ought to be given early, which facilitates the labour. On the other hand, if the bowels be loose, a few drops of tincture of opium may be given with much advantage.

It is immaterial in what posture the woman place herself during the first stage of labour; but in the second stage, when delivery is approaching, it is proper that she be placed on her

side, and it is usual for her to lie on the left side, as this enables the practitioner to use his right hand. The knees are a little drawn up, and generally at this time kept separate, by means of a small pillow placed between them. Many women wish to have their feet supported, or pressed against by an assistant, and it is customary to give her a towel to grasp in her hand. This is either held by the nurse, or fastened to the bed post. We must, however, be careful that these contrivances do not encourage the woman to make strong efforts to bear down.

When the woman is in bed, it is proper to have a soft warm cloth applied to the external parts, in order to absorb any mucus or water that may be discharged, and this is to be removed when it is wet.

Attempts to dilate the os uteri or the vagina, and the application of unctuous substances, to lubricate the parts, are now very properly abandoned by well instructed practitioners.

The membranes ought generally to be allowed to burst, by the efforts of the uterus alone, for this is the regular course of nature; and a premature evacuation of the water either disorders the process and retards the labour, or, if it accelerate the labour, it renders it more painful. I cannot, however, go the length of some, who say that the evacuation of the water is always hurtful; for there are circumstances in which it may be allowable, and beneficial. It is allowable when the os uteri is fully dilated, and the membranes protruded, perhaps even out of the vagina. In such a case, they would in a few pains at farthest give way; but by rupturing them, we can take precautions to keep the person dry, and more comfortable than she would otherwise have been. Even if the membranes are not considerably protruded, if the os uteri be completely dilated, no injury can arise from rupturing them, for they ought, in the natural course of labour, to give way at this time. But although the practice be not detrimental, yet it does not thence follow that it is always expedient; and it will be a useful rule to adhere to, that the seldomer we in-

terfere in this respect in a natural labour, the more prudent will our conduct be.

Examination ought, in the first stage of labour, to be practised seldom; in the second stage we must have recourse to it more frequently, and, when the pains are becoming stronger and the head advancing, we must not leave the bedside. At this time we should be prepared for the reception of the child. A pair of scissors, with some short pieces of narrow tape, must be laid upon the bed or chair, and a warm cloth or receiver must be at hand, or spread under the clothes, to wrap the child in. As the fæces are generally passed at this time involuntarily, a soft cloth is to be laid on the perinæum; and when the second stage of labour is drawing to a conclusion, the hand is to be placed on this, in order to prevent the rapid delivery of the head, and the consequent laceration of the perinæum. This is a point of very great importance, and which requires to be carefully considered by the practitioner. There are several arguments against this practice: for we should, *à priori*, conceive, that as parturition is a natural process, it ought not in any part to be defective, or to require the regulation of art. Next, we should strengthen this doctrine, by finding, that in the savage state, a lacerated perinæum is rarely discovered, and in all those women who are speedily delivered by themselves, the perinæum is seldom if ever torn. But on the other hand, the fact is ascertained beyond all dispute, that the perinæum is sometimes lacerated, notwithstanding these presumptive proofs against the occurrence of the accident. This being ascertained, it becomes our duty, however rare the case may be, to determine its causes, and prevent its occurrence in every instance; for we cannot exactly say who the unfortunate individuals may be, to whom it is to happen. We may decidedly say, that the perinæum is torn in consequence of distension; but in every delivery, the perinæum must be distended, and in some to a great degree. In proportion to the facility of the distension, and the ease with which the vagina dilates, is the risk of laceration diminished. It has, therefore, become a practical rule, to resist,

with the hand placed on the perinæum, the delivery of the head, until the parts be sufficiently relaxed; and this pressure ought to be exerted over the whole tumour, but especially at the fourchette, for although the perinæum has been perforated by the head, which did not pass through the orifice of the vagina, yet usually, the rent begins at the fourchette and proceeds backwards to a greater or less degree. By firmly supporting the perinæum, and at the same time, exhorting the woman not to force down during a pain, and thus retarding the delivery of the head until we feel the vulva, as well as the perinæum relaxing, we may generally prevent laceration, and therefore this accident will seldom if ever happen in the hands of a prudent practitioner. Still it is possible for the perinæum to be torn under good management. A little bit of it is not unfrequently lacerated, notwithstanding all our precaution; and although, in this slight degree, it is of no consequence, yet we thus see, that art cannot always completely prevent the accident. Sometimes the restlessness of the patient almost inevitably prevents the necessary precautions from being used;* and it may happen that the frame is so very irritable, that the perinæum unexpectedly lacerates at the time when it is supposed to be in a favorable state. As there must be some point where the resistance must stop, else the labour would be unnecessarily protracted, or perhaps even the uterus ruptured, it is possible that such resistance may be made, as generally is sufficient to prevent the accident, but which may not in some particular case, owing to the irritable state of the perinæum, be adequate to the intended purpose; or the power of the uterus may be so strong as to expel the head, in spite of every allowable resistance, and in some of these cases it is possible for the perinæum to be torn.

It is not sufficient that the practitioner support the perinæum, until the head is going to be expelled; he must continue to do so whilst it is passing out, for there is then a

* Dr Denman, a most worthy and experienced practitioner, with a candour which does him great honour, acknowledges, that from this cause the accident occurred in his own practice.

great strain on the part, as the forehead is passing over the perinæum, and even the face moving along it may produce injury. After the head is delivered, it is still necessary to place the hand under the chin, and on the perinæum, for the arm of the child comes next to press against this part, and may either tear it by pressure, or by coming out with a jerk. Farther, to prevent injury and avoid pain, the body of the child should be allowed to pass out in a direction corresponding to the outlet of the pelvis, that is to say, moving a little forwards. But there is no occasion that the child should be carried forward betwixt the thighs, for, in a natural labour, the back of the child is directed to the thighs; it can easily bend, and will naturally so incline itself in the delivery, as to take the proper direction. The last advice to be given respecting this stage of labour is, that as we retard rather than encourage the expulsion of the head, so we are not to accelerate the delivery of the body. Women in a state of pain call for relief, and expect that the midwife is to assist the delivery of the child; but no entreaties ought to make us hasten the expulsion of the head, and after that event, there is little inducement to accelerate the labour. Sometimes, in a few seconds, the child is expelled, but there may be a cessation of pain for some minutes. In the first case, we take care that the body is not propelled rapidly, and with a jerk. In the second, we attend to the head, examining that the membranes do not cover the mouth, but that the child be enabled to breathe, should the circulation in the cord be obstructed. There is no danger in delay, and rashly pulling away the child is apt to produce flooding and other dangerous accidents. Should there, however, be a considerable interval betwixt the expulsion of the head, and the accession of new pains, we may press gently on the belly, or pull the child slightly, so as to excite the uterus to contract. Or, should the woman have several pains without expelling the body of the child, it may be allowable gently to insinuate the finger, and bring down the shoulder; but even this assistance is rarely required, and on no account ought we to attempt

the delivery by pulling the head. Sometimes a delay is produced by the cord being twisted round the neck; and in this case, all we have to do, is to slip it off over the head.

The child being born, a ligature is to be applied on the cord very near the navel, and another about two inches nearer the placenta. It is then to be divided betwixt them, and the child removed. The hand is next to be placed on the belly, to ascertain that there be not a second child; and the finger may, for the same purpose, be slid gently along the cord to the os uteri. The hand of an assistant should be applied on the abdomen, and gently pressed on the uterus, which may excite it to action, and prevent torpor. Immediately after the expulsion of the child, there is often a copious evacuation of water, which is sometimes mistaken by the woman for a discharge of blood. But hemorrhage never takes place so instantaneously, in such quantity. It is generally a minute or two, sometimes much longer, before flooding comes on; against the occurrence of this, we are to be on our guard.

The woman, after the delivery of the child, feels quite well, and expresses, in the strongest language, the transition from suffering to tranquillity. But in a short time, generally within half an hour, one or two trifling pains are felt and the placenta is expelled, which completes the last stage of parturition; and when the process goes on regularly, nothing is required in this stage, except watchfulness, lest hemorrhage supervene.

But it sometimes happens, that the placenta does not come away so early or so readily as we expect. It may be retained for many hours, or even for some days. This retention can be caused by preternatural adhesion of the placenta, or by the uterus contracting spasmodically round the placenta, forming a kind of cyst, in which it is contained; or the uterus may not contract on the placenta so strongly as to expel it. Some, from a confidence in the powers of nature, have inculcated as a rule of conduct, that unless flooding take place, the placenta ought not to be extracted. Others have, with equal zeal, advised it to be brought away immediately after the

birth of the child. The safest practice seems to lie betwixt the two extremes. To leave the expulsion of the placenta altogether to nature, is a step attended with great danger; for as long as it is retained, we may be sure that the uterus has not contracted strongly and regularly. If then, in these circumstances, the placenta should be partially or completely detached, hemorrhage is very likely to occur. If it still adhere to the uterus, the risk of hemorrhage certainly is diminished, for those vessels alone, which opened on the decidua, can be exposed; but we have no security that this adhesion shall remain universal for any given time. As long, then, as the placenta is retained, the woman is never free from the risk of flooding. In many cases, she has died from this cause before the placenta was expelled; or if, after a long delay, the placenta has come away, its exclusion has sometimes been followed by fatal hemorrhage.* But this, although a dreadful accident, is not the only one, arising from retention of the whole or part of the placenta. For great debility, constant retching, and fever, are often produced by this cause, and may ultimately carry off the patient. It is therefore not without great reason, that women are anxious for the expulsion of the placenta; and this prejudice may have a good effect in operating against the conceits of speculative men, who suppose that nature is, in every instance, adequate to the accomplishment of her own purposes.

On the other hand, daily experience must convince every one, that there is no occasion for extracting the placenta immediately after the birth of the child, for it is usually expelled, with perfect safety, within forty minutes after the child is delivered. Nay, we find that the speedy extraction of the placenta is directly hurtful, both as it is painful, and also as it is sometimes followed by uterine hemorrhage, or, if rashly performed, by inversion of the womb. The practice

* Mr. White has, in his *Treatise on the Management of Pregnant and lying in Women*, p. 307, related several cases where the practice of leaving the placenta to be expelled by nature alone, was productive of fatal hemorrhage, and in one instance, this event took place, although the placenta was at last expelled.

then, I think, may be comprised in two directions. First, that we ought never to leave the bed-room, until the placenta be expelled; and secondly, that if it be not excluded in an hour, or at most an hour and a half after delivery, we ought to extract it. This point being adjusted, it is next to be inquired, how the retention is to be prevented, and, if not prevented, how the placenta is to be extracted. With regard to the first question, it may be answered, that the placenta will be less apt to be retained, if the expulsion of the child be conducted slowly, and the uterus made to contract fully upon it. As to the mode of extracting the placenta, we can be at no loss, if we recollect that the expulsion is accomplished by the contraction of the uterus. Our object, then, is to excite this when the placenta is retained, in consequence of the womb not acting strongly. The hand is to be slid slowly and cautiously into the uterus, which is often sufficient to make it contract; but if it do not, the hand is to be moved a little, or pressed gently on the placenta, at the same time that we pull very slightly by the cord, or lay hold of the detached placenta with our hand, and with caution extract it slowly. This requires no exertion, for the uterus is pressing it down, and, if any force be used, we do harm. Attempts to bring away the placenta, by pulling strongly at the cord, whether the hand be introduced into the uterus or not, are always improper. If persisted in, they generally end, either in the laceration of the cord, or the inversion of the uterus.

There are two circumstances, however, under which the placenta may be retained, which require some modification of the practice. The first is, when the placenta is retained by spasm. In this case, when the hand is conducted along the cord through the os uteri, the placenta is not perceived, but it is led by the cord to a stricture, like a second but contracted os uteri, beyond which the placenta is lodged. This contraction must be overcome before the placenta can be brought away, which may be accomplished by gradual and

continued attempts to introduce one, two, or more fingers through it; and these, if cautiously made, are perfectly safe. It will, however, be observed, that the uterus at short intervals contracts, which is accompanied with pain; but this contraction is confined to the stricture alone, the cavity of the womb not being lessened by it, and during this state all attempts to dilate the aperture are hurtful. We must be satisfied with keeping the fingers in their place, to preserve the ground we have gained. Opiates have been proposed to remove this spasm, and render the introduction of the hand unnecessary; they seldom, however, succeed alone, but given in a full dose may make the manual attempt more easy. Sometimes the sudden application of a cloth dipped in cold water, to the belly, has the same effect. The second circumstance to which I alluded is, adhesion of the placenta, which usually is only partial. This may occur with or without a change of structure, but in general the structure is more or less altered, the adhering part being denser than usual, and sometimes almost like cartilage. The separation of the adhering portion should not be attempted hastily, nor by insinuating the finger between it and the uterine surface. It is better to press on the surface of the placenta, so as thus to excite the uterine fibres to contract more briskly at the spot; or by gently rubbing, or, as it were, pinching up the placenta between the fingers and thumb, it may be separated. If, however, the adhesion of the part of the placenta be very intimate, we must not, in order to destroy it, scrape and irritate the surface of the uterus, but ought rather to remove all that does not adhere intimately, leaving the rest to be separated by nature. (2) But in taking this step, we are not to proceed with impatience, nor to

(2) Dr. Smellie relates two cases of this kind. In the first he brought away the indurated portion, but the woman died from hemorrhage. In the second he left the adhering portion, and the woman recovered. *Coll.* 23, c. 1 and 2.—See also Giffard's cases, c. 119 and 127; and La Motte, c. 358 and 362. In these, although the adhesion was very intimate, he brought away the placenta in pieces.

attempt to bring away the non-adhering portion, until a considerable time has elapsed, and cautious efforts have been made to remove the entire placenta, thus satisfying ourselves of the existence of an obstinate and intimate union. Cases, where this conduct is necessary, are very rare, and when they do occur, there is generally an induration of the adhering part. Sometimes the placenta adheres when it is unusually tender and soft, and then we must, with peculiar care, avoid hasty efforts, by which the placenta would be lacerated, and part left behind, which would be hurtful afterwards; whereas by a little more patience, and gentle pressure on the surface of the placenta, the uterus might have been excited to throw the whole off.

CHAPTER III.

Of Premature Labour.

WHEN a woman bears a child in any of the three last months of pregnancy, she is said to have a premature labour, and this process forms a medium between abortion and natural labour.

In some cases, the uterus is fully developed before the usual term of gestation, and then contraction commences; but, in a great majority of instances, premature labour proceeds from accidental causes, exciting the expulsive action of the uterus, before the cervix and os uteri have gone through their regular changes. The cervix must, therefore, be expanded by muscular action, before the os uteri can be properly dilated; and this preparatory stage is generally marked by irregular pains, and not unfrequently by a feverish state, preceded by shivering. A feeling of slackness about the belly, with different anomalous sensations, often accompany this stage of premature labour. When the cervix is expanded, then the os uteri begins to dilate, and this part of the process is often more tedious than the same period of natural

labour, and generally as painful. It is also frequently attended with a bearing down sensation. The second stage of labour is usually expeditious, owing to the small size of the child. The decidua being thicker than at the full time, the protrusion of the membranes is attended with more sanguineous discharge; and if the woman move much, or exert herself, considerable hemorrhage may take place. The third stage is likewise slow, for the placenta is not soon thrown off. In the last place, spasmodic contraction of the uterus is more apt to take place in all the stages of premature than of natural labour. A variety of causes may excite the action of the uterus prematurely, such as distension from too much water; or the death of the child, which is indicated by shivering, subsidence of the breasts, cessation of motion, and of the symptoms of pregnancy; or the artificial evacuation of the liquor amnii; or violent muscular exertion; or drugs acting strongly on the stomach and bowels; or passions of the mind, or acute diseases, or rigidity of the uterine fibres. Certain general conditions of the system render the operation of these causes more easy, such as plethora, debility, and great irritability.

A tendency to premature labour is to be prevented by the means pointed out when treating of abortion. I have only to add, that when the abdomen is tense and hard, or painful, indicating a rigidity of the uterine fibres, or of the abdominal muscles, tepid fomentations, gentle laxatives, and repeated small bleedings, are useful.

When a woman is threatened with premature labour, we ought, unless there be very decided marks of the death of the child, to endeavour to check the process, which is done by exhibiting an opiate, keeping the patient cool and tranquil, and removing any irritation which may exist. If she be plethoric, or the pulse be throbbing, blood is to be detracted.

When labour is established, it is to be conducted much in the same way with parturition, at the full time; but the following observations will not be improper. The patient

must avoid much motion, lest hemorrhage be excited. Frequent examination and every irritation are hurtful, by retarding the process, and tending to produce spasmodic contraction. If this contraction take place, marked by paroxysms of pain referred to the belly or pubis, little or no effect being produced on the os uteri, a full dose of tincture of opium should be given, after the administration of a clyster. Severe pain, with premature efforts to bear down, and a rigid state of the os uteri, require venesection, and afterwards an opiate. The delivery of the child is to be retarded, rather than accelerated, in the last stage, that the uterus may contract on the placenta. This is farther assisted, by rubbing gently the uterine region after delivery. If the placenta be long retained, or hemorrhage come on, the hand is to be gently introduced into the uterus, and pressed on the placenta, to excite the fibres to throw it off. We should not rashly attempt to remove it, for we are apt to tear it; neither are we to pull the cord, for it is easily broken.

CHAPTER IV.

Of Preternatural Labour.

VARIOUS signs have been enumerated, by which it was supposed, that malposition of the child might be discovered antecedent to labour. An unusual shape of the abdomen; some peculiar feeling, of which the mother is conscious, and which she has not felt in any former pregnancy; greater pain or numbness in one leg than in the other; a sensation of the child rising suddenly toward the stomach; have all been mentioned as indicating this, but are all, even when taken collectively, uncertain tokens. We cannot determine the presentation, until labour has begun. In a great majority of instances, the head, during the end of gestation, may be felt resting on the cervix uteri, but, in repeated instances, I have not been able to distinguish it in a pregnancy which

ended in natural labour. Sometimes, in consequence of a fall, or other causes, the head seems to recede, but afterwards returns to its proper position. When labour begins, we may generally distinguish the head by its proper character; but, if it lies high, and especially if the pelvis be deformed, we may not find it always easy to ascertain the presentation at a very early period. In such cases, it is of great consequence to preserve the membranes entire. When the head does not present, the presentation is generally more distant, and longer of being distinctly ascertained,* the lower part of the uterus is more conical, and the tumor formed by the cranium cannot be felt through the membranes or cervix uteri: when the finger touches it through the membranes, it very easily recedes, or seems to rise up. If the child lie more or less across the uterus, the os uteri is generally long of being fully dilated, the membranes protrude like a gut, and sometimes, during the pains, the woman complains of a remarkable pushing against the sides. The pains are severe, but in cross presentations, she is sensible that they are not advancing the labour.

It is a fact well ascertained, that although the head have been felt distinctly in the commencement of labour, yet, when the membranes break, it may be exchanged for the shoulder,† or some other part. On this account, as well as for other reasons, it is always proper to examine immediately after the membranes have given way.

ORDER FIRST.

The breech is distinguished by its size and fleshy feel, by the tuberosity of the ischia, the shape of the ilium, the

* When the presentation is long of being felt, we have been advised to examine the woman in a kneeling posture, or even to introduce the hand into the vagina, and rupture the membranes. This last advice is sometimes useful, as it enables us, if the presentation require it, to turn the child at a time when it can be easily done. But this is not to be hastily practised, nor adopted till the os uteri is well dilated.

† I have been informed of a case, where the shoulder was exchanged for the head, and Joerg seems to have met with the same circumstance. *Hist. Partus*, p. 90.

sulcus between the thighs, the parts of generation, and by the discharge of meconium, which very often takes place in the progress of labour.* After the breech has descended somewhat into the pelvis, the integuments may become tense or swelled, so as to make it resemble the head. Before the membranes burst, the presentation is very mobile, and bounds up readily from the finger.

Many have advised, that when the breech presented, the feet should be brought down first; but the established practice now is, when the pelvis is well formed, and other circumstances do not require speedy delivery, to allow the breech to be expelled without any interference, until it has passed the external parts.

The breech, and consequently the body of the child, may vary in its position, with regard to the mother; but there are chiefly two situations requiring our attention, because the rest are ultimately reduced to these. First, where the thighs of the child are directed to the sacro-iliac junction of the pelvis; and secondly, where they are directed to the acetabulum. In either of these cases, delivery goes on with equal ease, until the head comes to pass. Then, if the thighs have been directed to the fore part of the pelvis, the face will also be turned toward the pubis, and cannot clear its arch so easily as the vertex.

When the thighs are directed to the back part of the pelvis, we find that the process of delivery is as follows. The breech generally descends obliquely, one tuberosity being lower than the other. The lowest one follows the same turns as the vertex does in natural labour, and observes the same relation to the axis of the brim and outlet of the pelvis. The breech is expelled with one side to the symphysis of the pubis, and the other to the coccyx; and after the presenting tuberosity protrudes under the arch of the pubis, the other clears the perinæum, like the face, in natural labour. Whilst

* A discharge of liquor amnii, apparently coloured with meconium, is no proof that the breech presents, neither is it a sign that the child is dead.

the breech is protruding, it gradually turns a little round, so that the shoulders of the child come to pass the brim diagonally, the diameter from the acetabulum to the sacro-iliac junction being the greatest. The breech being delivered, a continuance of the pains pushes it gradually away, in the direction of the axis of the outlet, until the legs come so low as to clear the vagina. When this takes place, the head is generally passing the brim obliquely, the face being turned toward the sacro-iliac junction; and most frequently the arms pass along with it, being laid over the ears. They then slip down into the vagina, by the action of the uterus, and the head alone enters the cavity of the pelvis. The face turns into the hollow of the sacrum, and the chin tends toward the breast of the child. Then it clears the perinæum, which slips over the face, and the vertex comes last of all from under the pubis. If, however, the chin be folded down on the breast before the head has descended into the pelvis, then, from the unfavourable way in which it enters the brim, there may be some difficulty to the passage, for it in some respect resembles a presentation of the face. The hand should be introduced, and the face pressed up. In one case, Dr. Smellie found so much difficulty that he applied the crotchet on the clavicle.

Now the management of this labour is very simple. Whilst the breech is coming forth, the perinæum is to be supported, and nothing more is to be done till the knees are so low as to be on a line with the fourchette. If they do not naturally bend, and the feet slip out, the finger of one hand is to be employed to bend the leg gently, and bring down the foot; the knee, in this process, pressing obliquely on the abdomen of the child. But whether the legs be expelled naturally, or be brought down, we must carefully protect the perinæum, lest it should be torn by a sudden stroke of the leg in passing. Next, the cord is to be pulled gently down a little, to make the circulation more free. Thirdly, we attend to the arms; if these do not descend by the natural efforts, we introduce a finger, and gently bring down first one, and then

the other, using no force, lest the bone should break. The perinæum is also to be guarded, to prevent a slap of the arm from injuring it. Fourthly, if the head do not directly turn down, the finger is to be carried up, and placed upon the chin or in the mouth, in order gently to depress it toward the breast, and this is generally sufficient. To guard the perinæum, the hand must be applied on it, and the body of the child moved near the thighs of the mother, that the vertex may more readily rise behind the pubis, whilst the face is passing. If the body be, on the contrary, removed farther from the mother, and nearer the operator, the head can neither pass so easily into the pelvis, nor out from the vagina. In a natural labour, after the head is expelled, the whole body should be allowed to be slowly born by the efforts of the womb alone. But in breech cases, should the process, after the breech is expelled, be slow, the delivery of the body and head must by the means I have related, be accelerated, lest the umbilical cord suffer fatal compression. The first symptom of danger is a convulsive jerk of the body, and, if the head be not speedily brought down, the child will be lost. Should delay inevitably arise, we must try to bring the cord to the widest part of the pelvis. But even although all pressure could be removed, the child cannot live long, if it be not delivered, as the function of the placenta is soon destroyed, that organ being often entirely detached from the womb, following the head whenever it is born.

When the thighs in breech cases, are directed to the pubis, then the face cannot turn into the hollow of the sacrum. It rests for some time on the pubis, and it comes out with difficulty under the arch, for in breech and footling cases, the face is generally born before the vertex. In order to prevent this difficulty, it will, as soon as the breech is expelled and the feet are delivered, be proper to grasp the breech, and slowly endeavour to turn the body round; but, should this not succeed, or not have been attempted, till the shoulders have come down and the head is about to pass the brim, the practice is dangerous, and the neck may be

materially injured. It is, in this case, better to introduce a finger, and press with it on the head itself, endeavouring thus to turn the chin, from the acetabulum to the sacro-iliac junction of the same side. If the position be not rectified, then we assist the descent by depressing the chin, and gently bringing it under the pubis; and this may be facilitated by pressing the vertex upward and backward, making it turn up on the curve of the sacrum, to favour the descent of the face. We must be careful of the perinæum.

When the pelvis is contracted or deformed, it will be prudent, at an early stage of the labour, to bring down the feet. But if this have been neglected, then, should the difficulty of delivery, or the length of time to which the labour is protracted, require it, we must insinuate a blunt hook, or rather a soft ribband, over one of the groins, and thus extract the breech. Should the head not easily follow the body, we must not attempt to extract it by pulling forcibly at the shoulders, as we may thus tear the neck, and leave the head in utero.* The cord is, first of all, to be freed as much as possible from compression; then we gently depress the shoulders, in the direction of the axis of the brim, at the same time that we with a finger act upon the chin. Should this not succeed, we must apply the lever over the head, and depress in the proper direction. If this fail, the only resource is to open the cranium above or behind the ear, and fix a hook in the aperture; but this is not to be done until we have fully tried other means, and by that time the child will be dead.

When the breech presents, and parturition is tedious, the parts of generation are often swelled and livid. When the parts are merely turgid a little, and purple from congestion

* La Motte, Chapman, Smellie, and Perfect, give examples of the head being left in utero without the body, and the body without the head. There are chiefly two sources of danger, the first, and most immediate, is uterine hemorrhage; the second is the consequence of putrefaction, which produces sickness, nausea, fever, and great debility. The head may be extracted, by fixing a finger in the mouth, or by the crotchet with or without perforation.

of venous blood, nothing is necessary to be done. But when inflammation takes place, it is more troublesome, for being of the low kind, it is apt to end in gangrene. Fomentations are useful, but often spirituous applications succeed best.

ORDER SECOND.

Presentation of the feet is known, by there being no rounded tumour formed by the lower part of the uterus. The membranes also protrude in a more elongated form than when the head or breech present. The presenting part, when touched during the remission of the pain, is felt to be small, and affords no resistance to the finger. When the membranes break, we may discover the shape of the toes and heel, and the articulation at the ankle. Sometimes both the feet and the breech present. Two circumstances contribute to an easy delivery: first, that the toes be turned toward the back of the mother; and secondly, that both feet come down together. The best practice is, to avoid rupturing the membranes till the os uteri be sufficiently dilated; then we grasp both feet, and bring them into the vagina, or, if both present together at the os uteri, we may allow them to come down unassisted. In either case, we do not accelerate the delivery till the cord is in a situation to suffer from pressure; that is, till the knees are fully protruded, and the thick part of the thighs, near the breech, can be felt; then, if the face be towards the belly of the mother, we grasp the thighs, and gently turn the body round. The management is the same as in breech cases. There is little danger of the feet of two different children being brought down together, as twins are included in separate membranes. But as the case is possible, it is proper to attend that the feet be right and left.

Sometimes a knee and foot, or the knees alone, present; and as they form a larger tumour than the feet, they may at first be taken for the breech or the head. Generally only one knee presents, and it lies obliquely, with its side on the os uteri. It is known by its shape, and the flexure of the joint. Some advise that the case should be left altogether to nature, but it is often advantageous to bring down the feet.

ORDER THIRD.

When the shoulder or arm presents, the case has the general character of preternatural presentations. The round tumor, formed by the head in natural labour, is absent, whilst we can ascertain the shape and connexion of the arm and shoulder. A shoulder presentation can only be confounded with that of the breech. But in the former case, the shape of the scapula, the ribs, the sharpness of the shoulder joint, and the direction of the humerus, together with our often feeling in our examination either the hand or neck, will be distinguishing marks. In the latter, the rounder shape and greater firmness of the ischium, the size of the thigh, its direction upward, and its lying in contact with the soft belly, the spine of the ilium, the parts of generation, the size of the tuberosity of the ischium, and the general shape of the back part of the pelvis, contribute with certainty to ascertain the nature of the case.

The hand and arm may present under different circumstances. The original presentation may have been that of the shoulder, but the arm may have, in the course of the labour, been expelled; or the hand may rest on the os uteri, before the membranes have broken; or the fore arm may, for a length of time, lie across the os uteri, the hand not being protruded for some hours. Sometimes both hands are felt at the os uteri, and even both arms may be expelled into the vagina; but in most cases this does not happen, unless an improper conduct be pursued. In some rare instances, the hands of twins have been found presenting together, both sets of membranes having given way: it is more common to find both the hands and feet of the same child presenting; and this, next to the presentation of the feet alone, is the easiest case to manage.* It is not uncommon, in this case, to find the

* If the uterus be firmly contracted, the liquor amnii having been all evacuated, it may sometimes be necessary to carry the hand up to the knees, to change the situation

cord presenting at the same time, and then, by delay, the child may be lost.

In most cases where the superior extremities present, the feet of the child are found in the fore part of the uterus, toward the navel of the mother. But their situation may be known, by examining the presentation. If we feel the shoulder, we know that if the scapula be felt toward the sacrum, the feet will be found toward the belly. If the arm be protruded into the vagina, the palm of the hand is found in pronation, directed toward the side where the feet lie. It is easy to know which hand presents. If we examine with the right hand, we shall find, that if the palm of the child's hand be taken into ours in a state of pronation, the thumb of the right hand, or the little finger of the left hand, will correspond to our thumb.

In these preternatural presentations, the ancients were acquainted with the practice of turning, and delivering the child by the feet. But their remarks on this subject formed no general rule of conduct; on the contrary, practitioners were almost invariably in the habit of endeavouring to remove the presentation, and to bring the head to the os uteri. Paré was among the first who advised turning as a general practice; but even his pupil Guillimeau disregarded the rule, and left it to Mauriceau to enforce it, both by reasoning and practice.*

We should be careful not to rupture the membranes prematurely; and more effectually to preserve them entire, we must prevent exertion, or much motion on the part of the mother. As soon as the os uteri is soft, and easily dilatable, the hand should be introduced slowly into the vagina, the os uteri gently dilated, and the membranes ruptured. The hand is then to be immediately carried into the uterus, and upwards until the feet are found. Both feet are to be grasped betwixt our fingers, and brought down into the vagina, taking care

* Mauriceau justly observes, that although, after much fatigue, the head can be brought to the os uteri, the woman may not have strength to finish the delivery.—In a case mentioned by Dr. Smellie, the patient died of flooding —Joerg still admits the propriety of bringing the head, when it is nearer than the feet to the os uteri, or the fœtus is so placed, that the feet cannot without difficulty and danger be brought down

that the toes are turned to the back of the mother. The remaining steps have been already described. This operation is not very painful to the mother; it is easily accomplished by the accoucheur, and it is not more hazardous to the child than an original presentation of the feet. But it is necessary in order to render this assertion correct, that the operation be undertaken before the liquor amnii be evacuated, and it is of importance to fix upon a proper time. We are not to attempt the introduction of the hand whilst the os uteri is hard and undilated; this is an axiom in practice: on the other hand, we are not to delay until the os uteri be dilated so much, as to be apparently sufficient for the passage of a bulky body. In the cases now under consideration, the os uteri does not dilate so regularly, and to so great a degree, before the membranes break, as when the head presents. If we wait in this expectation, the membranes will give way before we are aware. If the os uteri be dilated to the size of half a crown, thin and lax, the delivery ought not to be delayed, for every pain endangers the rupture of the membranes. If they do give way, we are immediately to introduce the hand, and will still find the operation easy, for the whole of the water is not discharged at once, nor does the uterus immediately embrace the child closely. If the liquor amnii has been discharged in considerably quantity previous to labour, or if the membranes have burst at the commencement of it, when the os uteri is firm and small, we must, by a recumbent posture, try still to preserve a portion of the waters, till the orifice will permit delivery. The introduction of the hand into the vagina and os uteri may be rendered easier, and less painful, by previously dipping it in oil or lintseed tea, or any other lubricating substance.

But if the water has been long evacuated, then the fibres of the uterus contract strongly on the child, the presentation is forced firmly down, and the whole body is compressed so much, that the circulation in the cord frequently is impeded, and, if the labour be protracted, the child may be killed. This is a very troublesome case, and requires great caution

If the pains be frequent, and the contraction strong, then all attempts to introduce the hand, and turn the child, must not only produce great agony, but, if obstinately persisted in, may tear the uterus from the vagina, or lacerate its cervix or body. After a delay of some hours, however, the uterus may be less violent in its action, or by medical aid the pains may be suspended. Copious blood-letting, certainly, has a power in many cases of rendering turning easy, but it impairs the strength, and often retards the recovery.(x) If the patient be restless and feverish, it may, to a certain extent, be necessary and proper; but if not, we shall generally succeed, by giving a powerful dose of tincture of opium, not less than sixty or eighty drops. Previous to this, the bladder is to be emptied, lest it should be ruptured during the operation; and if necessary, a clyster is to be administered. The patient is then to be left, if possible, to rest. Sometimes in half an hour, but almost always within two hours after the anodyne has been taken, the pains become so far suspended, as to render the operation safe, and perhaps easy. Our first object is, to get the hand into the uterus; and for this purpose, we must raise up the shoulder a little, working the fingers past it, by slow, cautious, but steady efforts. The cervix often contracts spasmodically round the presentation, and is the chief obstacle to the delivery, but the opiate generally allays this.† Sometimes our efforts renew the pains, which, although they may not prevent the operation, make it more painful, and cramp and benumb the hand. Having passed the hand beyond the cervix, we carry it on betwixt the body of the child and the surface of the uterus, which is felt hard and smooth, from the tonic or permanent action of the fibres, until we reach the feet, both of which, if possible, we seize and bring down; but if we cannot easily find both, one is to be brought down

(x) This can only be true where blood-letting is pushed to an improper extent, or is employed where the woman is previously debilitated. ED

† The spasm may yield rather suddenly to the head, as if rupture of the fibres had taken place. I was informed of one case of this kind, but the womb was entire, and no bad symptoms came on.

into the vagina, and retained there. The child will be born, with the other folded up on the belly. In bringing down the feet, as well as in carrying up the hand, we must not act during a pain, but should keep the hand flat on the child; a contrary practice is very apt to lacerate the uterus. Before introducing the hand, we must ascertain, by examining the presentation, which way the feet lie, that we may proceed directly to the proper place. We must also consider, whether we shall succeed best with the right or the left hand. If the right shoulder or arm present, some have made it a rule to deliver with the left hand, others with the right; but much must depend on the dexterity of the operator, and the position of the woman. The most common position is the same as in natural labour. Sometimes we may find it useful to make the woman lie forward on the side of the bed, with her feet on the ground, and to place ourselves behind her.

When the hand and arm have been protruded, and the shoulder forced down in the vagina, it has been the practice with many, before attempting to turn, to return the arm again within the uterus; and when this was impracticable, it has been torn or cut off, especially if the child was supposed to be dead. Others advise, that we should not attempt to reduce the arm; nay, even that we should, in difficult cases, facilitate the operation, by bringing down the other arm, in order to change, to a certain degree, the position of the child. So far from it being necessary to replace the arm, we shall sometimes find advantage from taking hold of it with one hand, whilst we introduce the other along it, as the parts are thus a little stretched, and serve as a director, by which we slip into the uterus.

By the means pointed out, and by a steady, patient conduct, we may, in almost every instance, succeed in delivering the child. But it must be acknowledged, that in some cases, from neglect or mismanagement, the woman is brought into great danger, or may even be allowed to die undelivered. This catastrophe proceeds sometimes from mere exhaustion, or from inflammation, but oftener, I apprehend, from rupture of the

uterus; or, in a neglected case, so much irritation may be given to the system, as well as to the parts concerned in parturition, that although the delivery be easily accomplished, the woman does not recover, but dies, either from pulmonic or abdominal inflammation, or fever, or flooding. Moreover, such tedious cases generally end unfavourably for the child.

When turning has not been practicable, if the child was supposed to be alive, the os uteri has been cut, or the *cæsarean* operation has been proposed and practised.* If dead, it has been extracted, by pulling down the breech with a crotchet;† and sometimes, in order to assist delivery, the body has been mutilated,‡ or the head opened with the perforator.

When the child has been small, or premature, it has happened that the arm and shoulder have been forced out of the vagina, and then, by pulling the arm, the delivery has been accomplished.§ In a greater number of instances, a spontaneous turning of the child has taken place, and the breech has been expelled first. The action of the uterus is exerted in the direction of its long axis, and therefore tends to push its contents through the os uteri. The child forms an ellipse; and either in natural labour, or presentation of the breech, the long axis of the ellipse corresponds to the long axis of the uterus. But in a shoulder presentation, the axis of the ellipse lies obliquely with regard to that of the uterus, or to the direction of the force; and therefore the continued action of the uterus may tend, by operating on the side of the ellipse, to

* Vide Memoir by M. Baudelocque, in *Recueil Period.* tome V. table 1. cases 5 and 15.

† Peu, in one case where both arms were protruded, applied a fillet over the breech to bring it down. *Pratique* p. 412.—Smellie, in 1722, brought down the breech with the crotchet. Col. 35, case 3 —Giffard did the same in 1725, case 3.

‡ Vide Perfect, vol. 1. p. 351 —Dr. J. Hamilton's Cases, p. 104. He found it necessary to separate three of the vertebræ.—Dr. Clark twisted off the arm, and perforated the thorax freely. At the end of 36 hours the fœtus was expelled double *Med. and Phys. Jour.* vol. VII. p. 394.

§ Giffard, case 211; and Baudelocque *l'Art*, § 1530, in a note.—In Mr. Gardiner's case, the head followed the shoulders. *Med. Comment.* V. 307.

depress the upper end, and in the same proportion elevate the shoulder, the child moving like the beam of a pair of scales. Dr. J. Hamilton justly observes, that the evolution can only take place when the action of the uterus cannot be exerted on the presenting part, or where that part is so shaped that it cannot be wedged in the pelvis. This occurrence was first of all noticed, I believe, by Schoenheider;* but Dr. Denman† was the first who, in this country, called the attention of practitioners to it. He collected no less than thirty cases, but in these only one child was born alive. It does not appear that the child being large, is an obstacle to the delivery.‡ A knowledge of this fact does not exonerate us from making attempts to turn; for although a considerable number of cases are recorded where it has taken place, yet these are few in proportion to the number of presentations of the shoulder. In this city, which contains not less than 90,000 inhabitants, I cannot learn that one case of spontaneous evolution has taken place, though some women have either died undelivered, or have not been delivered until it was too late to save them. (y)

Sometimes the arm presents along with the head, and this can only render delivery tedious or difficult, by encroaching

* Acta. Havn. tom. II. art. xxiii.

† Lond. Med. Jour. vol. V. p. 64.—See also case by Mr. Outnwait, in New Lond. Med. Jour. vol. II. p. 172.—Mr. Simmons Med. Facts and Obs vol. I. p. 76.—Perfect's Cases, II. 367.—Med. and Phys. Journ. vol. III p. 5.

‡ Mr. Hey's Case, in Lond. Med. Jour. vol. V. p. 305.

(y) Delivery by *spontaneous evolution* is a very rare occurrence. But that it occasionally happens is proved beyond suspicion by the cases recorded by Dr. Denman and other respectable practitioners. Considering the difficulty and even danger often incident to turning, it is certainly important to know how to distinguish those particular cases in which this curious resource of nature will probably be successfully exerted. To warrant such an expectation, it must clearly appear that the uterine action, instead of operating on the presenting part, fixing it more closely in the pelvis, has the contrary effect of displacing it, and gradually bringing it out of the pelvis. But, if we are convinced after a careful examination that there is no tendency to *spontaneous evolution*, we should proceed to turn the child, as in proportion to the delay of the operation is commonly the hazard attending it. ED.

on the dimensions of the pelvis. This case does not require turning; but if we can, we should return the arm beyond the head; if we cannot, we may succeed in bringing it to a place where it will not interfere much with the passage of the head. Sometimes the head is placed pretty high, being retained by a spasmodic contraction of a band of fibres round it, and the arm is the only presentation which can be felt, until the hand be introduced. Opiates, in this case, may be of service. We must never attempt by force to destroy the stricture, in order either to return the arm or bring down the head.

Occasionally, both a hand and the feet have been found presenting with the head, or the feet and head present. In such cases, we can, if necessary, bring down the feet altogether, and this is in general proper.

Besides these presentations, we may meet with the back part of the neck, and upper part of the shoulder; or the nape of the neck alone; or the throat. These, which are very rare, require turning. They are recognised by their relation to the head and shoulders.

ORDER FOURTH.

The hips, back, belly, breast, or sides, may, though very rarely, present, the child lying more or less transversely. The hip is sometimes taken for the head,* but is to be distinguished by the shape and relations of the ilium. In all the other cases, the presentation remains long high; but when the finger can reach it, the precise part may be ascertained, by one who is accustomed to feel the body of a child. If the child lie transversely, it may remain long in the same position, and the woman may die if it be not turned. But if, as is more frequently the case, it be placed more or less obliquely, then, if the pains continue effective and regular, either the breech or the shoulder will be brought to the os uteri, according as the original position favoured the descent of one or other end of the ellipse formed by the child. In these presentations, the hand should be introduced, to find the feet, by which the

* La Motte was of opinion, that no part resembled the head more than the hip. Vide obs. 283 and 284.

child is to be delivered. But, this rule is not absolute with regard to the presentation of the hip, which only renders labour tedious.

ORDER FIFTH.

The child may present the head, and yet it may be improperly situated, and give rise to painful and tedious labour.

1st. The forehead, instead of the vertex, may be turned to the acetabulum. In this case the presentation is felt in the first stage high up, smooth and flatter than the vertex. In a little longer, we discover the anterior fontanelle, and the situation of the sutures. By degrees, the head enters the cavity of the pelvis, the vertex being turned into the hollow of the sacrum; and by a continuance of the pains, the forehead either turns up within the pubis, and the vertex passes out over the perinæum, or the face gradually descends, and the chin clears the arch of the pubis, the vertex turning up within the perinæum toward the sacrum, till the face is born. In this presentation, all the steps of the labour are tedious, and often, for a considerable period, the pains seem to produce no effect whatever. In the last stage, the perinæum is considerably distended, and it requires care and patience to prevent laceration. This presentation is difficult to be ascertained, at an early stage, before the membranes burst; and sometimes the duration of the labour is attributed to weakness of the uterine action, and not to the position of the head. If it be discovered early, it is certainly proper to rupture the membranes, and turn the vertex round, a proceeding which is easily accomplished, and which prevents much pain and fretfulness. If this opportunity be lost, we may still give assistance. Dr. Clarke says, that in thirteen out of fourteen cases, he succeeded in turning round the vertex, by introducing either one or two fingers between the side of the head near the coronal suture, and the symphysis of the pubis, and pressing steadily during a pain, against the parietal bone. Of the advantage of this practice, I can speak from my own observation. Some have advised that we should keep up the forehead during a pain, to make the vertex descend; or that we should, with the finger, depress the occiput.

The fontanelle, or crown of the head, may also present, although the face be turned to the sacro-iliac junction. In this case it is felt early, and by tracing the coronal suture, we may ascertain whether the frontal bones lie before or behind. It is a much more uncommon presentation than that noticed above. The labour is, at first, a little slower than in a natural presentation; but by degrees, the head becomes more oblique, the vertex descending; and this may be assisted, by supporting the forehead with the finger during a pain. Should any untoward accident require the delivery to be accelerated, we have been advised to turn the child, and in doing so to use the left hand, if the occiput lie to the left acetabulum, and *vice versa*. But this operation can seldom be requisite.

The crown of the head may also present with the face to the pubis or the sacrum, but these positions are extremely rare. In time, the head will become more diagonal, and descend more obliquely; but it is by no means difficult to move the head with the finger, and, if we attempt it early, we may carry the forehead from the pubis to the sacro-iliac junction. The process is still more simple when the occiput is turned to the pubis.

2d. The side of the head may present. In this case the presentation is long of being felt, but it is recognised by the ear. If, however, it has been long pressed in the pelvis, it is extremely difficult to determine the case. It is very rare, and has even been deemed to be impossible. In some instances the child has been turned, but it is most common to rectify the position of the head by introducing the hand.

3d. The occiput may present, the triangular part of the bone being felt at the os uteri. It is known by its shape, by the lambdoidal suture, and its vicinity to the neck. The forehead rests on some part of one of the psoæ muscles, and from this oblique position of the head, the labour is tedious. It has been proposed, in this case, to turn; but it is better, if we do any thing, to rectify the position of the head with the hand. Nature is, however, adequate to the delivery, even if not assisted. Some advise, that the woman should, by a change of position, endeavour to remedy the obliquity, mak-

ing the child incline, so as to affect the situation of the head, but this has not much power in altering the position of the presentation, at least after the water has been evacuated.

4th. The face may present, with the chin to one of the acetabula, or to the sacro-iliac junction, or to the pubis or sacrum. The two last are the worst and the most uncommon positions. When the face presents, the labour is generally tedious and painful, for it is little compressible, and affords a broad surface, not well calculated to take the proper turns in the pelvis. The head, also, being thrown back on the neck, a larger body must pass, than when the chin is placed on the breast. By a continuance of the pains, the face becomes swelled; and although at first it was recognisable by the features, yet now it is indistinct, and has been taken either for a natural presentation or the breech. By rude treatment, the skin may be torn; and even under the best management, the face, when born, is very unseemly, and sometimes quite black and elongated, so that it has been known to measure nearly seven inches.

Face presentations have been attributed sometimes to convulsive vomiting, cough, or frequent examination, but generally no evident cause can be assigned; and in the beginning of labour, the face itself does not present, but only the forehead: hence La Motte tells us, that although at first he found the head present properly, yet, when the membranes broke, the face came down.

Some have advised, that the child should be turned; others that the chin should be raised up, to make the upper part of the face come down, or that if the head be advanced, a finger should be inserted into the mouth, to bring down the jaw under the pubis. Others leave the whole process to nature; but many endeavour with the hand to rectify the position.

If the presentation be discovered early, there can be little doubt as to the propriety of rectifying the position, but if the labour be advanced, this is difficult; and then it only remains that we should endeavour, if the labour be severe and tedious,

to make the face descend obliquely, by supporting with a finger, during the pains, the end which is highest,* in order to favour the descent of the lower end. When the chin has advanced so far as to come near the arch of the pubis, we may follow a different method, and gently depress it, which assists the delivery, for generally the chin is first evolved. If, however, the process go on regularly, and tolerably easy, we need not make these attempts. As the perinæum is much stretched, we must support it, and avoid all hurry in the exit of the head.

ORDER SIXTH.

Sometimes the cord descends before, or along with the presenting part of the child. This has no influence on the process of delivery, but it may have a fatal effect on the child; for, if the cord be strongly compressed, or compressed for a length of time, the child will die, as certainly as if respiration were interrupted after birth. If the cord be discovered presenting before the membranes burst, or if the os uteri be properly dilated when they burst, the best practice is to turn the child. It has indeed been proposed, to push the cord beyond the presenting part, or hook it upon one of the limbs; but, if the hand is to be introduced so far, it is better at once to turn the child. If the os uteri be not sufficiently dilated, we must not use force to expand it; and little can be done, except by rest, to prevent, as much as possible, the evacuation of the water. As soon as the os uteri will admit the introduction of the hand, the child should be turned, if it can be easily done. But if the presentation be advanced before we are called, and turning be difficult, then we must endeavour to keep the cord slack, or remove it to that part of the pelvis where it is least apt to be compressed; or it will be still better, to endeavour with two fingers to push the cord slowly past the head, and prevent it for two or three pains from coming down again. This is less violent,

* This is almost always the chin. Our management must be gentle and cautious.

and safer, than attempts to turn in an advanced stage of labour. Should this not be practicable, and the pulsation suffer, or the circulation be endangered, we must accelerate labour by the lever or forceps. If the pulsation be stopped, and the child dead, when we examine, then labour may be allowed to go on, without paying any attention to the cord. The sum of the practice then is, that when the os uteri is not dilated, so as to permit of turning, we must not attempt it; when turning is practicable, it is to be performed. When the head has descended into the pelvis, the cord is to be replaced, or secured as much as possible from pressure; but, if the circulation be impeded, the woman must be encouraged to accelerate the labour by bearing down, or instruments must be employed. When the presentation is preternatural, these directions are likewise to be attended to, and the practice is also to be regulated by the general rules applicable to such labours.

ORDER SEVENTH.

Various signs have been mentioned, whereby the presence of a plurality of children in utero might be discovered, previous to their delivery. These are, an unusual size, or an unequal distension of the abdomen, an uncommon motion within the uterus, a very slow labour, or a second discharge of liquor amnii during parturition. These signs, however, are so completely fallacious, that no reliance can be placed upon them, nor can we generally determine the existence of twins, until the first child be born. Then, by placing the hand on the abdomen, the uterus will be found large,* if it contain another child; and, by examination per vaginam, the second set of membranes, or some part of the child, will be found to present. This mode of inquiry is proper after every delivery.

Soon after the first child is born, pains usually come on,

* In a case related by Mr. Aiken, the uterus was felt, after delivery, large and hard, as if it contained another child, but none was discovered. In the course of a fortnight, the tumour gradually disappeared. *Med. Comment.* vol. II. p. 300.

like those which throw off the placenta, but more severe; and they have not the effect of expelling it, for it is generally retained till after the delivery of the second child. No intimation of the existence of another child is to be given to the mother, but the practitioner is quietly to make his examination, rupture the membranes, if they have not given way, and ascertain the presentation. If it be such as require no alteration, he is to allow the labour to proceed according to the rules of art, and usually the expulsion is very speedily accomplished. If the first child present the head, the second generally presents the breech or feet, and *vice versa*; but sometimes the first presents the arm, and, in that case, when we turn, we must be careful that the feet of the same child be brought down. This one being delivered, the hand is to be again introduced, to search for the feet of the second child, which are to be brought into the vagina, but the delivery is not to be hurried.

It sometimes happens, that after the first child is born, the pains become suspended, and the second is not born for several hours. Now this is an unpleasant state, both for the patient and practitioner. She must discover that there is something unusual about her, and he must be conscious that hemorrhage, or some other dangerous symptom, may supervene. The first rule to be delivered is, that the accoucheur is upon no account to leave his patient till she be delivered. The second regards the time for delivering. Some have advised that the case be entirely left to the efforts of nature, whilst others recommend a speedy delivery. The safest practice, perhaps, will lie between the two opinions. If effective pains do not come on in three, or at farthest in four hours, the child may be delivered, either by turning, or with the forceps, generally by the first mode; for if the head have come so low as to admit of the forceps, the delivery most likely will be accomplished without assistance.

If, however, the position of the second child be such as to require turning, we are to lose no time, but introduce the hand for that purpose, before the liquor amnii be evacuated,

or the uterus begins to act strongly on the child. Turning, in such circumstances, is generally easy. When the child presents the breech or feet, the directions formerly given, respecting these presentations, are to be attended to.

In the event of hemorrhage, convulsions, or other dangerous symptoms, supervening between the birth of the first and second child, the delivery must be accelerated, and managed upon general principles.

When there are more children than two, the woman seldom goes to the full time, and the children survive only a short time. There is nothing peculiar in the management of such labours.

It still remains to observe, that we ought to be peculiarly careful in conducting the expulsion of the placenta of twins. Owing to the distension of the uterus, and its continued action in expelling two children, there is a greater than usual risk of uterine hemorrhage taking place. The patient must be kept very quiet and cool, gentle pressure should be made with the hand externally on the womb, and no forcible attempts are to be permitted, for the extraction of the placenta, by pulling the cords. If hemorrhage come on, then the hand is to be introduced to excite the uterine action, and the two placenta are to be extracted together.

The placenta are often connected, and therefore they are naturally expelled together, but this adds nothing to the difficulty of the process. Sometimes they are separate, and the one is thrown off before the other; or it may even happen, that the placenta of the first child is expelled before the second child be born, but this is very rare, and is not desirable.

Women, who have born a plurality of children, are more disposed than others to puerperal diseases, and must therefore be carefully watched. It rarely happens, that they are able to nurse both children without injury.

It is possible for two children to adhere, or for one child to have some additional organ belonging to a second, as, for example, an arm or an head. Such cases of monstrosity

may produce considerable difficulty in the delivery; and the general principle of conduct must be, that when the impediment is very great, and does not yield to such force as can be safely exerted, by pulling that part which is protruded, a separation must be made, generally on that part which is protruded, and the child afterwards turned, if necessary. Unless the pelvis be greatly deformed, it will be practicable to deliver, even a double child, by means of perforation of the cavities, or such separation as may be expedient, and the use of the hand, forceps, or crotchets, according to circumstances. A great degree of deformity may render the cæsarean operation necessary.

With respect to children who are monstrous from deficiency of parts, I may take the present opportunity of observing, that no difficulty can arise, during the delivery, except in ascertaining the presentation, if the malformation be to a great extent, as, for instance, in acephalous children.

CHAPTER V.

Of Tedious Labour.

ORDER FIRST.

IF the expulsive force of the uterus be diminished, or the resistance to the passage of the child be increased, the labour must be protracted beyond the usual time, or a more than ordinary degree of pain must be endured; a variety of causes may disturb or prolong the process of parturition. The first and most obvious is, a weak and inefficient action of the uterine fibres. This may be dependent on general debility, but more frequently it proceeds from the state of the uterus itself. It is marked by feeble pains, which dilate the os uteri slowly, and are long of forcing down the head. But although the pains be feeble, they may produce as great sensation as usual, for this is proportioned rather to the sen-

sibility than to the vigour of the part. It is, however, usual, when labour is protracted from this cause, for the pains to be less severe than in natural labour. They may come much seldomer, or, if frequent, they may last much shorter, and be less acute. The whole process of labour is sometimes equally tedious, but in most cases, the delay principally takes place in one of the stages, generally in the first, if the cause exist chiefly in the uterus. On the other hand, when it proceeds from constitutional debility, if the first stage be somewhat tedious, the second is commonly still more so. It is not always easy to say what the cause of this slow action of the uterus is. Sometimes it proceeds from contraction commencing rather prematurely; or from the membranes breaking very early, and the water oozing slowly away; or from the uterus being greatly distended by liquor amnii, or a plurality of children; or from fear, or other passions of the mind, operating on the uterus; or from torpor of the uterine fibres, frequently combined with a dull leucophlegmatic habit, or with a constitution disposed to obesity; or from general weakness of the system.

In a state of suffering and anxiety, the mind is apt to exaggerate every evil, to foresee imaginary dangers, to become peevish or desponding, and to press with injudicious impatience for assistance, which cannot safely be granted. Great forbearance, care, and judgment, then, are required, on the part of the practitioner, who, whilst he treats his patient with that gentleness and compassionate encouragement, which humanity and refinement of manners will dictate, is steadily to do his duty, being neither swayed by her fears and intreaties, nor by a selfish regard to the saving of his own time.

A variety of means were at one time employed for exciting the action of the uterus, such as dilatation of the os uteri, and the use of emetics, purgatives, or stimulants. A very different practice now happily obtains; the patient is kept cool, tranquil, and permitted to repose; the mildest drink is allowed, all fatiguing efforts are prohibited, and she is encouraged by the mental stimuli of cheerfulness and

hope, rather than by wine and cordials. But, whilst in cases where the labour is only a little protracted, we trust entirely to this treatment, yet, where it is longer delayed, some other means are allowable and necessary. These are intended to excite the uterine action more effectually, but they are both safe and simple. A saline clyster is to be administered, which often has an excellent effect, and is always proper; or a gentle purge may be given. Should this plan, however, fail, and the pains produce little effect, an opiate is to be exhibited, which sometimes renders the action brisk, or, if the pains have a tendency to remit, it procures some sleep, after which they become more efficient. These are the two views which we have in exhibiting anodynes, and they will be accomplished under different circumstances. The first requires a small, the second a full dose of the medicine. If the water has been oozing away, it is useful to press up the head, especially during the pains, to favour the evacuation of the water; for, whenever this is accomplished, naturally or artificially, the action becomes much stronger. If, again, the membranes be entire, the os uteri soft, lax, and well dilated, and the presentation natural, it is allowable and beneficial to rupture the membranes; and this is more especially proper, if the uterus be unusually distended. The evacuation of the water is succeeded by more powerful action, a circumstance which, whilst it points out the advantage of the practice in the case under consideration, forbids its employment in natural labour, where the process is going on with a regularity and expedition, consistent with the views of nature, and the safety of the woman.

Sometimes, after the first stage is completed, and the os uteri is well dilated, the second does not commence for some hours; but the first kind of pains continue in different degrees of severity, without producing any perceptible effect. If no particular cause require our interference, it is best to trust to time; but if it be necessary to accelerate the labour, it may often be done by rupturing the membranes, or, if they have already broken, we may place two fingers on the margin of

the os uteri, which is next the pubis, and gently assist it during the pains, to slip over the vertex.

When a woman is greatly reduced in strength, previous to labour, that process is looked forward to with apprehension. It is, however, often very easy. But, if it should be protracted, the patient is to be kept from every exertion. The general plan of treatment is to be followed, and, if the strength fail, the child must be delivered. We must be particularly careful that hemorrhage do not take place after delivery, or that it be promptly stopped.

If the head rest long on the perinæum in tedious labour, the pains having little effect in protruding it, especially if the first stage have been lingering, it comes to be a question, whether we shall deliver the woman. This case is different from that where the difficulty proceeds from a contracted pelvis, for the head is low down, the bones are not squeezed nor mishapen, there is only a swelling of the scalp, the finger can be passed round the head, and two strong pains might expel it. Whilst the strength remains good, there is no warrant for delivering. A soothing treatment, promoting rest, restraining voluntary bearing down efforts, and giving a little wine, or an opiate, if the patient be exhausted, will generally be successful. But, if the labour be still protracted, the strength sinks, the pulse becomes weak and frequent, the pains useless, and sometimes vomiting comes on after every pain. In such cases, the forceps must be employed, as will hereafter be noticed. It is impossible to determine how many hours a labour may be permitted to continue, for time alone is not to be our rule; we must be regulated greatly by the effects of labour. Yet it may not be altogether useless to state the periods, at which lingering labour has terminated in a large hospital. From Dr. Breen's tables it would appear, that, in the Dublin hospital, of 172 women in labour of their first child, 102 were from 40 to 50 hours in labour; 34 from 30 to 40; 24 from 70 to 80; and 12 from 90 to 100; 121 children were alive. Of 91, who had born children formerly, 48 were from 40 to 50 hours in labour, 28 from 30 to 40; 9 from 70 to 80; and 6 from 50 to 60; 66 children were alive.

In tedious labour, it is not necessary to confine the woman to bed, or to one posture; she may be allowed to sit, lie, or walk, as she feels inclined; and we are not to urge her to stand long, or use exertion by way of promoting labour. She has generally not much inclination for food, but, if the process be protracted, it is useful to give some light soup, and a little wine, if she desire it. If the urine be not regularly passed in tedious labour, the catheter ought to be introduced. It is not necessary that the practitioner remain constantly with the patient. It will have a better effect upon her, if he see her at proper intervals; whilst he is thus prevented himself from being so fatigued, as he otherwise would be, and is therefore better able to discharge his duty with firmness and judgment. The second general cause of tedious labour is, irregular action of the uterine fibres. After the child is born, the uterus sometimes contracts like a sand-glass, and retains the placenta. The same spasmodic action may occur before the child be expelled. It is marked by pain coming at intervals, like proper pains, but it is confined to the belly, and has little effect on the os uteri, or in forcing down the child. The contraction does not go off with the pain, it only lessens; hence the band of fibres still compresses the child or ovum, and, if the membranes have not broken, they are often kept so tense, as at first to resemble a part of the child, and may mislead the practitioner with respect to the presentation. If this affection be slight, it may soon go off; but, if the spasm be strong, it sometimes continues for many hours. A smart clyster is often of service. Opiates I have tried, but I cannot speak with confidence of their effects, and prefer opening the membrane if the presentation be good, and the os uteri lax. But if the os uteri be rigid or undilated, and especially if the presentation be not determined, they must be kept entire, until the os uteri will permit of turning, should the position of the child require it. After the child is born, the hand should be introduced into the uterus, not to extract the placenta quickly, but to come easily in contact with it, and excite the uterus to regular action; for generally the spasm returns, and the placenta may be long retained, or hemorrhage produced.

Another cause of tedious labour is, the accession of fever, with or without local inflammation. Fever is recognised by its usual symptoms, and may be produced by the injudicious use of stimulants, heated rooms, irritation of the parts, &c. It is to be allayed by opening the bowels, keeping the patient cool in bed, and giving some saline julap; at the same time that the mind is to be tranquillized. If these means do not abate the heat, frequency of pulse, &c. and render the pains more effective, it will generally be proper to detract blood, especially if the head or chest be pained. When local inflammation accompanies fever, it is commonly of the pleura or peritoneum, and is preceded by chillness and shivering. The first is discovered by pain in the thorax, cough, and dyspnœa; the second by pain in the belly, gradually increasing, and becoming constant; pressure increases it, and in some time the patient cannot lie down, but breathes with difficulty, or is greatly oppressed, and vomits. The labour pains are sometimes suspended; on other occasions, they do ultimately expel the fœtus, but the woman dies in a few hours. On the first threatening of these symptoms, blood should be freely detracted, the bowels opened, and a gentle perspiration excited. If the inflammatory symptoms increase, and the labour is protracted, we must deliver the woman. (z)

Labour may also be rendered tedious, by the different stages not going on regularly, but efforts being prematurely made to bear down. In consequence of these, the uterus descends in the pelvis before the os uteri is dilated, and the process is often both painful and protracted. In some cases, the

(z) I have observed generally, that women in labour bear well the loss of blood. Bleeding, undoubtedly, when used judiciously, facilitates the expulsion of the child, and secures a more speedy recovery, or "*getting up.*" It moreover, obviates the train of unpleasant consequences to which women are liable from the tendency in their systems to inflammation at the time. As a remedy to suspend uterine action with a view of turning the child, bleeding is never to be neglected, provided the woman is not exhausted. But when it does not produce that effect, which will often happen, then the opium in a large dose may be resorted to with advantage. It is correct practice, however, in most cases to let bleeding precede the anodyne. *Ed.*

womb prolapses, so that its mouth appears at the orifice of the vagina. This prolapsus may take place during pregnancy, or after parturition begins. It is often met with, in a slight degree, whilst the os uteri is not greatly dilated, and uniformly injures the labour. We are to prevent it from increasing, by supporting the head or the uterus with two fingers, during the continuance of a pain; at the same time that the woman avoids, as much as possible, every bearing down effort, and remains in a recumbent posture. If the os uteri be slow of dilating, some blood should be taken away, and an opiate administered. It has happened that, by neglecting these precautions, the uterus has protruded beyond the external parts. In this case no time is to be lost in attempting the reduction, which will be rendered easier by cautiously pulling back the perinæum.* If this cannot be done, the os uteri, if lax and yielding, must be gently further dilated, the membranes ruptured, the child turned, and the uterus replaced.† The os uteri has been cut, but this can never be necessary, if the structure of that part be natural. When the womb does not actually protrude, the vagina may be inverted like a prolapsus ani. A soft cloth, dipped in oil, should be placed on the part, and pressure made with the hand. Giesman cut the inverted vagina on a probe, but this operation can rarely be required. If the womb prolapse before labour, as happened to Rœderer's patient, we must manage the case as a simple prolapsus. She had severe pains, although she was not in labour.

ORDER SECOND.

There exists, naturally, such a proportion between the size of the head and the capacity of the pelvis, that the one can pass easily through the other. But this proportion may be destroyed, either by the head being larger or more completely ossified, or the pelvis smaller than usual. In such cases, which are to be discovered by careful examination, it

* Vide Mem. of Med. Soc. vol. I. p. 213.

† Vide Portal's 10th Obs.; and Ducreux's case, in Mem. de l'Acad. de Chir. tome III. p. 368.

is evident that the labour must be more tedious, and more painful than it otherwise would be. The first stage of the process is sometimes, but not always slow, the second is uniformly so; the head is long of descending into the pelvis, it rests long on the perinæum, the pains are frequent, severe, and often very forcing, but the woman says they are doing no good. Now this state requires much patience and discretion. The bowels should be opened with a laxative; the urine regularly expelled: the strength preserved by quietness, avoiding unnecessary exertion, indulging any disposition to sleep, which may exist, and taking a little light nourishment occasionally; the mind is to be soothed, the hopes supported, and, if the pains begin to slacken, an opiate may be given, to procure rest. By these means, the child will be at last expelled, though, perhaps, not till the woman has been two or three days in labour.

Malposition of the head may likewise retard the labour; but this has already been considered.

Another cause of tedious labour is, rigidity of the soft parts, which may be dependent on advancement in life, or some local peculiarity; and these causes generally act more powerfully in a first than a subsequent labour. This rigidity may exist in the os uteri, in the external parts, or in both; and if, along with this, there be premature rupture of the membranes, the difficulty is always increased. When it exists in the os uteri, that part is very long of dilating; the effect of the pains, for a long time, is rather to soften than to dilate it; and after the woman has been many hours in labour, it is found, when the pain goes off, to be collapsed, and projecting like the os uteri in the eighth month of pregnancy. In this case, the first stage is very slow, lasting sometimes two or three days; and the second is likewise tedious. The whole process takes up, perhaps, four days or more. When the rigidity exists chiefly or partly in the external parts, they are found to be at first dry, tight, and firm. By degrees, they become moister and more relaxed; but they may still be so unyielding, as to keep the head for many hours resting on the perinæum. Now in these

cases, it is to be recollected, that generally time and patience will safely terminate the labour. When the head reaches the perinæum, if the pains be trifling or ineffective, it is of service to keep the woman for some time in a kneeling or erect posture. Some methods have been proposed for abating the rigidity; such as baths, fomentations, and oily applications; or digitalis and sickening medicines given internally; but these have no good effects, and some of them do harm. (a) Blood-letting has been employed in such

(a) These remedies are mostly inefficient or injurious. The *warm bath* is productive of no advantage, and is apt to detach the placenta, occasioning thereby dangerous hemorrhages. But I confess, my objections to it arise rather from what I have learnt of others in whom I can confide than from my own experience, having rarely seen the bath employed. *Nauseating medicines*, of different kinds, I have tried, but with no good effect. Where the external organs are rigid, and dry, and swelled, local *fomentations*, and *oily applications*, may, perhaps, be of some service.

Blood-letting, if regulated by a sound discretion, is undoubtedly the *remedy* in these cases. It may often be pushed to a considerable extent. I have drawn as much as fifty ounces of blood in the course of a day, or night, where the *os tincæ* obstinately refused to yield. In rigidity of the vagina, owing either to natural or acquired causes, and in tumefaction of the external parts attended with soreness to the touch, it is equally useful. By more than one of the physicians of this city, the credit has been claimed of originating the use of this remedy under these particular circumstances of parturition. With as much justice they might attempt to usurp the title to the discovery of the circulation of the blood, or of the Peruvian bark in the cure of intermittent fever. Ever since midwifery had any pretensions to be considered as a science, blood-letting has been advised with a view of overcoming the rigidity of the soft parts, whether it be in the *os tincæ* or in the external organs. Were it necessary, I could readily confirm my assertion by numerous citations from various writers. This point, however, has been so clearly settled by Dr. Davidge in two most admirably written essays that I am content at least for the present (meaning hereafter to resume the subject) merely to refer to them.* But though I have thus strenuously recommended blood-letting, I would at the same time caution against its indiscriminate use. In the United States it has become too much a fashion to bleed in parturition. That *sanguinary spirit* which was kindled up in the year 1793, and which has since with such fantastic extravagance raged through the country, has extended itself very injuriously to the practice of midwifery. Without regard to circumstances, some practitioners now bleed in almost every instance of la-

* Vide Barton's Journal.

cases. In determining on the use of this remedy, we must attend to the state and habit of the patient. Delicate women, those who are exhausted by fatigue, and especially the lower classes in large cities, are injured rather than benefited by this practice. Robust women, of a rigid fibre, in the middle class of society, or who live in the country, bear blood-letting better, and derive more benefit from it. In them it is especially proper, if any degree of fever attend the labour.

In some cases, the os uteri or external parts, instead of being rigid, are tumid, and apparently *œdematous*. (*b*) In these the labour is often protracted for several hours, especially when the os uteri is affected.

The os uteri may be naturally very small. In some instances, it has with difficulty admitted a sewing needle; and in two cases, during labour, I found it almost impervious, hard, circular, and with difficulty discovered, but it gradually dilated. Sometimes it is hard and scirrhus, so that it has been deemed necessary to make an incision into the os uteri, to make it dilate.* It is also possible for the os uteri to be closed in consequence of inflammation, so that it has been necessary to make an artificial opening.†

Contraction and cicatrices in the vagina, likewise retard labour, and cause very great pain until they either relax or are torn, but it is seldom necessary to perform any operation.

Excrescences proceeding from the os uteri, an enlarged ovarium remaining in the pelvis, or tumours attached to the ligaments, or a stone in the bladder, may all obviously retard labour, some of them so much as to require instruments. A stone in the bladder ought either to be pushed up beyond the head, or extracted.

bour. We are even told that it is useful in "debilitated women who faint on losing blood!" So preposterous an abuse of this most valuable remedy must ultimately have the effect of bringing it into disrepute. ED.

(*b*) Where *œdema* exist, of course it would be useless to bleed. ED.

* A case of this kind occurred to Dr. Simson of St Andrews, and another to a practitioner in America.

† Vide Case by Campardon, in *Recueil Period.* tom. XII. p. 277

A great degree of obliquity of the uterus protracts labour. The os uteri may be turned very much to one side, but oftener it is directed backwards and upwards, and may be out of the reach of the finger. Time rectifies this.

Malformation of the organs of generation may afford a great obstacle to the passage of the child, so that even an incision may be required, as happened in the case related by Mr. Bonnet, in the thirty-third volume of the *Philosophical Transactions*.

By shortness of the umbilical cord, or still more frequently, by the cord being twisted round the neck, the labour may be retarded, particularly the latter end of the second stage. The cord may be put on the stretch, but it never happens that it is torn, and very seldom that the placenta is detached. We have no certain sign of the existence of this situation; but there is presumptive evidence of it, when the head is drawn up again upon the recession of each pain. It often remains long in a position, which we would expect to be capable of very quick delivery. By patience, the labour will be safely terminated; but it may often be accelerated, by keeping the person for some time in an erect posture, or on her knees. After the head is born, it is usual to bring the cord over the child's head, so as to set it at liberty; and this is very proper when it can easily be done, as it prevents the neck from being compressed with the cord in the delivery of the child, by which the respiration, if it had begun, would be checked, or the circulation in the cord be obstructed. Some have advised that the cord should be divided, after applying the double ligature; but this is rarely necessary, for the child may be born, even although the cord remain about the neck.

Preternatural strength of the membranes has been considered as a cause of tedious labour, and we have accordingly been desired to tear them. This is, however, very seldom the case. When they remain long tense, it is oftener from spasm of the uterus than from firmness of structure.

CHAPTER VI.

Of Instrumental Labours.

ORDER FIRST.

THE head may be enlarged by disease, or the capacity of the pelvis may be considerably diminished, by causes which have been noticed in the beginning of this work. Then, from the pressure of the head upon the soft parts in the pelvis, and the forcible but opposed efforts of the uterus, severe pain is produced, and the sufferings of the patient are protracted in proportion to the resistance which is to be overcome. Now we have to consider the danger of such a case, and to recollect the cause of this danger. It proceeds from the pressure of the child upon the soft parts of the mother, which, within a certain period, must produce that kind of inflammation which is speedily followed by sloughing. Besides this source of risk, there is ground for alarm, lest the uterus should burst, or abdominal inflammation supervene, or a suppression of urine take place, or the system become irreparably exhausted, in consequence of long and severe exertion. These dangers are not all equally frequent in their occurrence, nor do they take place in the same degree in every case. It is however evident, that if the resistance cannot be overcome, and the child be born, one or more of these causes must destroy the mother; whilst the long continued pressure upon the child, the consequent injury which the head sustains, and the interruption which may be given to the circulation, must prove fatal to her offspring. But we likewise know, upon the other hand, that the regular and continued efforts of the uterus can overcome a very great resistance, and that these efforts, within certain limits, are safer for the mother, and more favourable to the child, than the application of artificial force. We should, therefore, lay it down as a general rule, that when the deformity is not excessive, and no urgent symptom is present, we should

fully ascertain what the uterus can do, before we assist it. We know, that if the pelvis measure, in its short diameter, only three inches and a half, then we must have a painful and difficult labour, because, as the head measures as much in its lateral extent, it must be compressed more or less, in order to pass. If the brim, however, measure only three inches, then the head of a child at the full time cannot pass, until it has been pressed so long as to diminish its breadth fully half an inch. The more, then, that the brim is reduced below its natural dimensions, the longer and the more painful must the labour be, until we come to such a degree of contraction, as will either render expulsion altogether impossible, or delay it until great danger has been induced.

It is difficult to draw the line of distinction betwixt that degree of contraction which will render it impossible for delivery to take place naturally, and that which will only render it extremely difficult. It has been proposed to ascertain this, by a rule founded on the dimensions of the pelvis. But this method cannot be brought to a sufficient degree of perfection, for the result of cases is much influenced by the size of the child, the pliability of its head, the vigour of the uterus, and other causes. Besides, it is difficult, if not impossible, to determine, with minute precision, the dimensions of the pelvis in the living subject; and they are apt to vary, according as the soft parts within the pelvis are more or less swelled. We shall find it better to judge by the progress which the head has been able to make. If it has not been able to enter the pelvis, or if only a very small part, after great exertion, has been able to enter, then it is not possible for the woman to bear the child, or even to have it brought through entire by the forceps or lever, for these instruments either could not be applied, or, if applied, the resistance would be so great as to prevent their success. It has therefore been laid down as a general rule, that these instruments, and especially the forceps, ought not to be applied until the os uteri is fully dilated, and the head so low down as to come in contact with the perinæum, and to make it

easy to feel an ear. The first part of the rule must always be attended to, and the second is seldom to be dispensed with. It has, indeed, been proposed to increase the length of the forceps, so as to operate with them, whilst the greatest part of the head remained above the brim of the pelvis; but the practice is dangerous and difficult, in proportion to the height of the head. The lever may be applied, and safely acted with, when only a third part of the head has entered the pelvis, and consequently before the forceps can be advantageously employed. Nevertheless, necessity, and not choice, leads us to the use of the lever in that situation. Hemorrhage or convulsion may require it; but in cases of simple contraction of the pelvis, unattended with these symptoms, the lever ought not to be applied until we have fully ascertained that the head cannot be forced any lower. As long as the pulse is good, and the pains are strong, and produce any effect upon the head, we ought not to interfere. It is the natural consequence of continued uterine action, that after a time the womb should become fatigued, and the pains cease or decrease. I must, however, remind the reader, that the pains may very early become suspended, even in natural labour, for hours, without any obvious cause, and without the smallest appearance of danger. No practitioner of discernment can be misled by this, when all other circumstances are natural; but if the pelvis be a little contracted, he must be careful to ascertain that the cessation really has proceeded from previous exertion, and not from a temporary cause. When the action flags, and there is no appearance of the fibres recruiting soon, when the woman is much fatigued, and perhaps the pulse frequent and feeble, we can gain no more from delay; we have ascertained what nature can, and what she cannot accomplish. In this case, the head is fixed in the pelvis, the uterus cannot force it down, and the accoucheur can scarcely, if he was willing, raise it up. It is said to be impacted or locked in the pelvis, for it is immovable; and at the same time, from the pressure, the integuments are tumefied, the presentation sometimes distorted, and the bones may be felt

making an acute angle with each other. When the pelvis is contracted or deformed, the bones of the cranium gradually yield, and the head is often lengthened very considerably. In every case where pressure is applied, the parietal bones form a more acute angle with each other, their protuberances approaching nearer together, so that, in some instances, the transverse diameter from the one protuberance to the other does not measure above two inches and a half; but the head is not always lengthened in the same proportion. Sometimes, the bones sliding one under the other, its length is even diminished. Children have been brought to me, where, either from the application of instruments, or the action of the uterus, the bones have been separated, and the one parietal bone forced completely beneath the other. From gradual swelling of the integuments, the head sometimes appears to advance when the bones are really stationary. Now, when the head is stationary; and especially if the pains have declined, there is great danger in longer delay, for it is sometimes difficult, if not impossible, to have the bladder emptied; and such injury may be done to the urethra, bladder, and rectum, as to cause sloughing.

There is another state which may require delivery, but which admits of longer delay. In this case the head is not locked in the pelvis, but, after entering it, is stopped or arrested for a long time, either by a slighter deformity at the brim than that which produces locked head, or by some contraction of the outlet or undue projection of the spines of the ischia, or in consequence of feeble or irregular action of the uterus, produced by various causes. In this case, the head is not absolutely immovable, the finger can be passed more freely round it than in the former case, and it may advance a little during a pain, and recede when it goes off. Delay, in this case is not attended with the same risk of injury to the contents of the pelvis; and we may safely trust to time, light nourishment, mild cordials and rest, until the flagging or cessation of the pains prove that the delivery cannot be expected from the powers of nature. It is necessary carefully to distinguish betwixt the paragonphosis or locked head, and the

case of arrest, for delay is safer in the latter than in the former. Some practitioners of great experience, justly afraid of the rash application of instruments, have perhaps spoken too indifferently on this subject. Dr. Osborn observes, that in the state indicating the use of the forceps, "all the powers of life are exhausted, all capacity for further exertion is at an end, and the mind as much depressed as the body, they would at length both sink together under the influence of such continued but unavailing struggles, unless rescued from it by means of art." Now in cases of locked head, this principle, if fully acted on, must often be attended with dangerous consequences; and even if restricted to cases of arrest, I must consider it as too strongly expressed.

When the head is locked or firm in the pelvis, and does not advance, we must deliver. The precise time, however, at which we must interfere, cannot be determined by any absolute rule laid down in a system. We have been told that the head must be allowed to rest on the perinæum for six hours, and then we are to deliver. But much must depend on the state of the pains, and the contraction of the pelvis. It is possible, that before the action of the uterus be nearly exhausted, the cervix may be ruptured; and therefore, in a contracted pelvis, when the pain is very severe, and chiefly felt in one spot, as the sacrum or pubis, when it is acute but unproductive, and the head firmly wedged, the probability of this dreadful accident taking place is so great, as to make it proper to deliver. When the urine is long retained, and cannot be drawn off, we must also interfere sooner than we otherwise would have done. But when the bladder is not distended, the uterus not firmly intercepted between the head of the child and the pelvis, the pains strong and forcing, or not suspended from weakness, and the general strength good, we ought to delay. As long as the pains have any effect, however small, in pressing down the head, and no dangerous symptom appears, we are warranted in trusting still to nature. But when they flag, and the head, after a severe or tedious labour, remains for some hours stationary, it would be dangerous to leave the woman longer undelivered. Some, amongst whom is

M. Baudelocque, advise, that whenever the head is locked, the woman should be assisted; and this advice is, upon the whole, a good one, if we be careful to confine the term "locked" to that state in which the head cannot be depressed by the pains, or raised by the hand; for then there is not only great risk of the uterus being ruptured, but also of the soft parts sloughing.

Too long delay, as well as the rash and early use of instruments, may prove fatal to the child.

When the pelvis and the child were of a disproportionate size, it was the practice before the forceps were discovered, to endeavour to turn the child, and deliver by the feet, which allowed the practitioner to use considerable force in pulling out the head. But if the resistance was great, the child was killed in the attempt, and often had the body torn away from the head, which was left in the uterus. This gave rise to many inventions and directions for the delivery of the head in these circumstances. If, on the other hand, the child could not be turned, the head was opened and the crotchet employed. To avoid turning, fillets were used by some; but no material improvement was made in practice, until the discovery of the forceps and the lever, one or other of which was (1) used

(1) Although it was the opinion of those who first described the forceps, that it was the instrument used by Chamberlain, yet of late some have supposed, but without very positive proof, that he employed the lever. This last instrument was about the same time used as a secret practice, by Rhoonhuysen, but was not divulged until about the middle of the last century. It was so constructed, as to be a very unsafe instrument, especially in rash hands. Mr. Giffard, in the beginning of the century, had repeatedly used one of the blades of his extractor or forceps, to draw or pull down the head; and much about the same time, Mr. Chapman, in one instance, performed a similar delivery. Vide Treatise, p. 186. It has been said that Chamberlain sold the secret of the forceps to Rhoonhuysen, who, finding that he could deliver with one of the blades, improved on it, and converted it into a lever; but the dissimilarity of the two instruments at that time, is an objection to that opinion. Plates of the different forceps and levers at present in use may be seen in Savigny's engravings; and a very concise account of all the different improvements and alterations of these instruments, from their discovery to the present time, may be found in Mulder's *Hist. Liter. et Critica Forcepium et Vectium Obstetricorum*.

first in Britain, by Mr. Chamberlain, about the middle of the seventeenth century. Others afterwards employed them, but still advised turning in preference, if the situation of the head permitted. Turning is now abandoned, and the only point under discussion by accoucheurs is, whether the forceps or lever ought to be preferred. I apprehend, that when the head has descended pretty low, and especially in cases of arrest, the forceps may be employed with great advantage; but when the head has not advanced so far as to have more perhaps than a third within the brim, the lever will be more advantageous. The chief superiority, then, of the lever is, that it can be used earlier than the forceps; for when the head has come low down, either instrument may be employed, with success and safety, by a practitioner accustomed to their application, and well acquainted with their mode of action.

WHEN the lever is to be employed, we are to apply the extremity of the instrument on the mastoid process of the temporal bone,* or side of the occiput. The woman may be placed on her left side, in the usual posture; and we then, with the fore finger of the right hand, feel for that ear which is next the pubis, and take it as our guide in passing the lever. Three directions must be particularly attended to. The first is, to keep the point of the instrument, during the introduction and operation, close to the head of the child, lest the bladder or rectum be injured. The second is, that the concavity of the instrument be kept in contact with the curvature of the head, by which it will be much more easily introduced than if it be separated to an angle from the head. It will, therefore, be necessary to keep the handle back toward the perinæum, in the beginning of the process; and it will be useful, especially to the young practitioner, to have more than

I do not think it necessary to describe the forceps, nor do I consider the slight variations made by different practitioners as of great importance. I prefer those, however, proposed by Dr. Lowder and Dr. Pole, to others. A particular kind of forceps, with three blades, was employed by Dr. Leak, but it is never used.

* This process is very indistinct in the fœtus, but the direction may still be retained, as it refers to a well known spot.

one lever of different degrees of curvature, for he may sometimes be able to introduce one which is very little bent, when one more concave will be applied with difficulty. It is a general remark, that within a certain range, the greater the curvature, the more is the difficulty of introducing it, but the greater is its power over the head. The third is, to attend to the axis of that part of the pelvis, in which the head is placed, and pass the instrument in that course. In the usual position, the blade will be placed behind the symphysis pubis, or perhaps a little obliquely, and the handle will be directed back towards the perinæum. As the blade is curved at its extremity, and as, in order to get it passed, its surface must be kept in contact with the head, it will be requisite to direct the handle more or less backward, according as the blade is more or less curved; and when it is introduced, the handle will be brought farther forward.

When we act with the instrument, we must not make any part of the mother a fulcrum; and indeed, whatever fulcrum be employed, we ought not to raise the handle much, or suddenly, in order to wrench down the head. Instead, at first, of raising the handle considerably, we rather attempt to draw down the head, as Mr. Giffard did with the single blade of his extractor, using the instrument more like a hook or tractor, than a lever. With the left hand placed upon the shank of the blade, we press it firmly against the head, which both prevents it from slipping, whilst we draw down with the right hand grasping the handle, and also serves as a defence to the urethra, should the handle be a little too much raised like a lever. At first, we should pull or act with the instrument gently, to see that it is well fixed, or adapted to the head. Afterwards we act with more force, but not rashly or unsteadily. These attempts will renew the pains if they had gone off, and then they ought only to be made during the continuance of a pain; for every practitioner knows, that the co-operation of pains adds prodigiously to the utility of the instrument. The head being brought fully into the pelvis, and the face turned into the hollow of the sacrum, we must act in the direction of the outlet; and for this purpose, it will

be useful to withdraw the instrument, and apply it cautiously over the chin, which, as less force is now necessary, will not suffer by the operation. Or the forceps may now successfully be applied, but frequently the natural pains will, without any farther assistance, finish the delivery. We must be careful of the perinæum.

When the forceps are used at first, instead of the lever, we must, in like manner, take the ear for our guide, passing the first blade over that side of the head which lies to the pubis.* With the finger of one hand we feel for the ear next the pubis, whilst with the other hand we introduce the blade into the vagina, the handle being directed very much backward. We then cautiously insinuate the blade along the head, and over the ear, moving it upwards with a gentle wriggling motion, until it slips between the head and the pubis. It is then to be moved on till we suppose its point to be applied over the chin. In this way, the blade follows a line drawn from the vertex to the chin, crossing over the ear. The second blade is to be introduced behind, on the opposite side of the head, and must follow a corresponding line upon it. After this, the handles are to be locked; and in doing this, the first blade must often be withdrawn a little, to be adapted to the second. They ought not to be tied. I beg it to be remembered, that in the introduction of the blade, both its point and its hollow surface must be kept in close contact with the head, as it passes on, otherwise the bladder may be perforated, or the uterus torn by one who overcomes resistance, not by art, but by force. The blade must be passed in the direction of the axis of the brim of the pelvis, and when the instrument is locked, the handles are inclined backward. If the handles do not join easily, or if they be not placed on corresponding lines, we cannot act, but must adjust one of them before operating. It is apparently unnecessary to direct that no part of the mother

* I believe that the short forceps, with a single curve, are as useful, and more easily applied, than those which have the blades curved laterally.— But if these should be employed, then they must be so introduced, that the convex edge of the blades shall be next to the face.

be included in the lock, but it is of importance to attend to this in practice. The introduction of the forceps is sometimes followed by a gush of liquor amnii, which may be fœtid and tinged with meconium, although the child be alive. (c)

In this process, we must be deliberate and cautious. We must never restrict ourselves in point of time, nor promise that it shall be very speedily accomplished. If we act otherwise, we shall be very apt to do mischief, or, if we find difficulty, to abandon the attempt. When the pelvis is so contracted as to make it just practicable to introduce the forceps or lever, that part of the head which is above the pubis sometimes projects a little over it, so that we cannot pass the blade until we press backward a little, with the finger, on that part which we can reach. All attempts to overcome the resistance by force, every trial which gives much pain, must be reprobated. But, on the other hand, as long as his conduct is gentle and prudent, the young practitioner must not be deterred because the patient complains, for the uterine pains are often excited by his attempt; or some women, from timidity, complain when no unusual irritation is given to the parts. Slow, persevering, careful trials, must be made; and I beg, as he values the life of a human being, and his own peace of mind, that he do not desist, and have recourse to the crotchet in cases at all doubtful, until it has been well ascertained that neither the lever nor forceps could be used.

The instrument being joined, we pull it downward, and move it a little, to ascertain that it is well applied. We then begin to extract, taking advantage of the first pain. If the pains still continue, we pull the instrument downward, and, at the same time, move the handle a little forward, toward the pubis; and then, after halting a second, move it slowly back again, still pulling down. We must not carry the instrument rapidly or strongly forward or backward, against the

(c) The forceps which I prefer are those of Mr. Haighton. They have two peculiarities in their construction. The blades have no curve, and are much broader than common. They are easier in application, and retain a firmer hold than any I have tried. ED

pubis or perinæum, but the chief direction of our force should be downward, in the direction of the axis of the brim. The motion of the pendulum kind is intended to facilitate this, but, if performed with a free, rapid, and forcible swing, the soft parts must be bruised, and great pain occasioned.

The head being made to descend, the face begins to turn into the hollow of the sacrum, and, in the same degree, the handles must move round on their axis; and when the face is thrown fully into the hollow, the handles must be turned more forward and upward, being placed in the axis of the outlet. The pendulum kind of motion must now be very little, and is to be directed from one ischium toward another. As the head passes out, the handles turn up over the symphysis pubis. In this stage, we must proceed circumspectly, otherwise the perinæum may be torn.

If the fontanelle present, the blades of the forceps are to be placed directly over the ears. If the lever be used, its point will rest on or near one of the mastoid processes. If the face present, the lever will rest on the back part of the temporal bone, or on the occipital bone; the forceps will have their points directed toward the vertex.

If the forceps or lever be injudiciously introduced, the bladder or uterus may be perforated; or if the head be allowed to remain too long jammed in the pelvis, some of the soft parts may slough. The under and posterior part of the bladder is apt to slough off, leaving the woman incapable of retaining her urine. This is best prevented, by being extremely attentive in every case, especially in those where the soft parts have suffered much or long from pressure, to evacuate the urine regularly twice a day, employing, if necessary, the catheter. The parts ought also to be kept very clean, and may be frequently bathed with decoction of chamomile flowers.

ORDER SECOND.

It unfortunately happens, that sometimes the pelvis is so greatly deformed, as not to permit the head to pass until it has been lessened by being opened.

It is universally agreed, that a living child, at the full time, cannot pass through a pelvis whose conjugate diameter is only two inches and a half. It has even been stated, by high authority, that if the dimensions were "certainly under three inches, a living child could not be born;" but although this opinion be too frequently correct, yet, like all other general rules, it has exceptions depending on the original size and peculiar constitution of the child, together with the pliability of the cranium, on the particular shape of the pelvis, and the force and activity of the uterus, as well as the general strength of the woman. There have been instances, where, by the efforts of nature, living children have been expelled through a pelvis scarcely measuring three inches; and there are similar examples of the delivery being, under the same conformation, accomplished with the lever.* We are not warranted, therefore, to open the head, merely because we estimate that the pelvis does not, in its conjugate diameter, measure fully three inches; but because we have ascertained, by a sufficient trial, that the uterine action cannot force down the head, and that the vectis cannot be applied or acted with effectively. In all cases where the dimensions, and circumstances of the case, are barely such as to warrant a belief that the head must be opened, an attempt ought previously to be made, not in a careless or hasty manner, but deliberately and attentively, to introduce and act with the vectis or forceps.

We may, however, if the dimensions be much under three inches, be assured, that delivery cannot be accomplished without the destruction of the child. But as it is a matter of great nicety to say whether the pelvis measures three inches, or only two and a half, or two and a fourth, a practice founded on arithmetical directions must be unsafe. In every case, there-

* M. Baudelocque relates a most interesting case, where there were decided marks of the fœtus being dead in utero, and yet these were delusive, for, by the forceps, the woman was delivered of a living child, although the pelvis measured only about three inches. *L'Art des Accouch.* § 1898.—Cases in point may also be seen in Dr. Alex. Hamilton's Letter, p. 94, 102, 112.—Similar instances have come within my own knowledge.

fore, we ought to allow some time for the pains to produce an effect; and this time should be longer or shorter, according as, in our estimation, the dimensions diminish from three inches to two inches and a half. In such extreme deformity as this, we have no reason to expect that the head can pass, unless it burst,* or be artificially opened; and therefore it should, for the advantage of the mother, be perforated as soon as the os uteri is properly dilated: but until the os uteri is fully opened, no attempt to introduce the perforator can be sanctioned.

But although it be thus laid down as a general rule, that the pelvis, which measures three inches in its conjugate diameter, may admit a living child to pass, either by the application of the vectis or forceps, or still more rarely by the efforts of the womb, yet it is nevertheless true, that sometimes the child must be destroyed, even when the space is fully three inches. This may become necessary, owing to the great size of the child and firmness of the cranium, or a hydrocephalic state of the head;† or the soft parts in the pelvis may swell so much as diminish, in an increasing ratio, the size of the pelvis, and effectually to obstruct delivery.‡ The parts may also be so tender, as to render even a common examination painful, and to prevent the application of the vectis or its effective action, in a case merely equivocal. Alarming convulsions may likewise induce us to perforate the head in a case of deformity, where it is perhaps possible that the vectis might succeed, after a greater delay or length of time than is compatible with the safety of the mother; but

* So far as I can judge, the sutures yield sooner than the scalp, and the brain is effused or pushed out like a bag. When the integuments open first, it is owing, I apprehend, to sloughing from pressure and injury. A very distinct case of spontaneous bursting of the cranium may be found in Dr. J. Hamilton's Cases, p. 17.

† I have seen a cranium so enlarged with water, that when it was inflated after delivery, so as to resume its former size, it measured twenty-two inches in circumference.

‡ Baudelocque *l'Art des Accouch.* § 1705.—See also a Case in point in Dr. A. Hamilton's Letters, p. 83.—Every attentive practitioner must, from his own experience, admit the fact.

this combination of evils must be rare. No practitioner, I believe, in this city, has met with such a case. At one period, however, the crotchet was employed in cases of convulsions, where the vectis or forceps would now be used.

By the rash and unwarrantable use of the crotchet, living children have been drawn through the pelvis with the skull opened, and have survived in this shocking state for a day or two.*

To prevent all risk of bringing a living mutilated child to the world, and to avoid, at the same time, killing or giving pain to the child,† even in those cases which clearly demanded the use of the perforator, some have delayed operating until the child appeared to have been destroyed by the expulsive efforts or other causes, and have therefore been anxious to ascertain the signs by which the death of the child might be known. (2) It was still more desirable to know these, at a time when the forceps were undiscovered. But the signs are generally extremely equivocal, nor is this much to be

* Vide Mauriceau, obs. 584—La Motte, case CXC.—Hamilton's Letters, p. 153.—Pou, La Pratique, p. 346—Crantz de Re Instrument, &c. § 38.

† It has been disputed, whether the child in utero was capable of sensation, but both facts and reasoning are in favour of its sensibility.

(2) The signs of a dead child have been described to be a feeling of weight, or sensation of rolling in the uterus, want of motion of the child, pallid countenance and sunk eye, coldness of the abdomen with diminution of size, flaccid breasts which contain no milk, fætor of the discharge from the vagina, liquor amnii coloured apparently with meconium, although the head presents, puffy feeling of the head, want of firm tumor formed by the scalp when the head is pressed in a narrow pelvis, no pulsation in the cord, &c. Most of the cases requiring the crotchet cannot be benefited by any marks characterizing death of the child in the progress of gestation; and we well know that the child may die during labour, without testifying this for a length of time by any sensible signs; and that those enumerated above are deceitful, I believe every attentive and unprejudiced practitioner will join with me in maintaining. Nothing but unequivocal marks of putrefaction of the child itself can make us certain, and these cannot be discovered for some time. Fætor of the discharge is not a test of this. Vide Mauriceau, obs. 281. When a woman bears a child which has been for some time dead, we must watch lest her recovery prove bad

regretted, for we do not operate because the child is dead, but because it is impossible for the woman to be otherwise delivered.

The steps of the operation are very simple. The rectum, but especially the bladder, being properly emptied, we place the fore finger of one hand on the head of the child, and with the other hand convey the perforator to the spot on which the finger rests. The instrument, being carried cautiously along the finger as a director, can neither injure the vagina nor os uteri, and in general no difficulty is met with in this part of the operation. Sometimes, however, in very great deformity, the os uteri is placed so obliquely, that it must previously be gently brought into the most favourable, that is, the widest part of the pelvis; and afterwards, the perforator, being placed on the head, must have its handle in the axis of the brim, which may require the perinæum to be stretched back. These points being attended to, the scalp is then to be pierced, and the point of the instrument rests on the bone, through which it directly, or after a momentary pause, is to be carried, either by a steady thrust or a boring motion. It is to be continued in, till checked by the stops. The blades are then to be opened, so as to tear up the cranium; and in order to enlarge the opening, they may be closed and turned at right angles, to their former position, and again opened, so as to make a crucial aperture. If the liquor amnii have been well evacuated, and a portion of the cranium have entered the pelvis, the perforation can be made without any assistance; but if the whole of the head be above the brim, it may be necessary to have it kept steady, by pressure above the pubis. It may be proper to add, that if the face present, we must perforate the forehead, just above the nose. If we have turned the child, and wish to open the head, the instrument must be introduced behind the ear.

The brain is next to be broken down, by turning the perforator round within the head. If part of the cranium have entered the pelvis, some of the brain will come out with a

squirt, whenever the bones are opened; and at all times we have more or less hemorrhage from the vessels of the brain. Sometimes the blood flows very copiously. The patient is now, if fatigued, to have an anodyne; and at any rate, except in very urgent cases, is to be left for some hours to repose, or to the operation of natural pains. Dr. Osborn, in his elaborate essays, advises, that the head should be opened early, and that we should then delay to extract for thirty hours. In cases of great deformity, decidedly requiring the use of the crotchet, the first direction is important; but where there is any possibility of avoiding the perforation, it ought not to be attempted till the event has proved the necessity. The general principle of the second direction is just where the first has been acted on, and the strength is good, and no urgent symptom is present; but the delay of the specific number of thirty hours is, in most cases, too long; and I question if it be sufficient to produce, in any case where the child was alive when the skull was perforated, such a degree of putrefaction as materially to facilitate the operation. The chief benefit of delay is, to bring as much of the cranium as possible into the pelvis.

If the deformity have been no more than just sufficient to require the use of the perforator, then, if the pains become strong, it is possible for the head to be expelled without farther assistance. But if the deformity be greater, or the pains weak, then only the pliable part of the cranium will descend, and the face and basis of the skull remain above the brim of the pelvis. In this case, the crotchet is to be introduced through the aperture of the cranium, and fixed upon the petrous bone, or such projection of the sphenoid bone, or occiput, as seems to afford a firm fixture. We then pull gently, to try the hold of the instrument; and this being found secure, we proceed to extract in the direction of the axis of the brim, by steady, cautious, and repeated efforts, exerting, however, as much strength as may be necessary to overcome the difficulty. In doing this, we must always keep a hand, or some of the fingers, in the vagina and on the cranium, to save the soft parts, should the instrument slip. If

the force be steadily and cautiously exerted, we may always feel the instrument slipping or tearing the bone, and have warning before it comes away. We should, in extracting, co-operate as much as possible with the pains.

But it sometimes happens, that the pelvis is so small, as to require the head to be broken down, and nothing left but the face and base of the skull. This is an operation which will be greatly facilitated by the putrefaction or softening of the head, which takes place some time after death. If the child be recently dead, the bones adhere pretty firmly, and, in a contracted space, it will require some management to bring them away. But if the parts have become somewhat putrid, or the child been long dead, the parietal and squamous bones come easily away, and the frontal bones separate from the face, bringing their orbitary processes with them. We have then only the face and basis of the skull left, and if the pelvis will allow these remains to pass, then the crotchet can be used. I have carefully measured these parts, placed in different ways, and entirely agree with Dr. Hull, a practitioner of great judgment and ability, that the smallest diameter offered, is that which extends from the root of the nose to the chin. For, in my experiments, after the frontal bones were completely removed, this did not in general exceed an inch and a half. It is therefore of great advantage, to convert the case into a face presentation, with the root of the nose directed to the pubis. The size of the crotchet, which ought to be passed over the root of the nose, and fixed on the sphenoid bone, must, however, be added, to this measurement. I never have yet been so unfortunate as to meet with what may be considered as the smallest pelvis, admitting of delivery *per vias naturales*;* but I would conclude, that whenever the pelvis with the soft parts

* I cannot learn that any case of extreme deformity in a pregnant woman, such as to render it barely possible to deliver with the crotchet, or necessary to have recourse to the cæsarean operation, has occurred in this city since the year 1775, when Mr. Whyte performed the latter operation.

measures an inch and three quarters,* or, if the head be unusually small, an inch and a half, the crotchet may be employed, provided the lateral diameter of the aperture in the pelvis be three inches, or within a fraction of that, perhaps two inches and three quarters, if the head be small or very soft; and the operation will be easy, as we extend the diameter of the pelvis beyond what may be considered as the minimum.

In this manner of operating, the face is drawn down first, and the back part of the occipital bone is thrown flat upon the neck like a tippet. If we reverse this procedure, and bring the occiput first and the face last, fixing the instrument in the foramen magnum, then, as we have the chin thrown down on the throat, we must have both the neck and face passing at once, or a body equal to two inches and three quarters. If, on the other hand, we fix the instrument on the petrous bone, which is certainly preferable to the foramen magnum, and bring the head sideways, we must have both that bone and the vertebræ passing at once, or a substance equal to two inches and a half in diameter; and if the head pass more obliquely, then it is evident that the size must be a little more. Although, therefore, Dr. Osborn be correct, in saying that the base of the cranium, turned sideways, does not measure more than an inch and a half; yet we must not forget, that when the opposite side comes to pass, the neck passes with it, which increases the size.

The head being brought down and delivered, we then fix a cloth about it, and pull the body through; or, if this cannot be done, we open the thorax and fix the crotchet on it, endeavouring to bring down first a shoulder, and then the arm.

In operating with the crotchet, we must always bring the head through the widest part of the pelvis; but where the deformity is considerable, no small force is requisite. This is productive of pain during the operation, and of danger of

* M. Baudelocque considers the crotchet as inadmissible, when the pelvis measures only an inch and two thirds

inflammation afterwards, which may end in the destruction of some of the soft parts; or, affecting the peritoneum, it may prove fatal to the patient. From injury done to the bladder, retention of urine may be produced, which, if neglected, is attended with great risk. Incontinence of urine is less to be dreaded, as it is sometimes cured by time. Severe pain in the loins and about the hips, with lameness, is another troublesome consequence. If the patient be not affected with malacosteon, the warm, and at a more advanced period the cold bath, friction, and time, generally prove successful.

To avoid the destruction of the child, and the severity of the operation of extracting it, the induction of premature labour has been proposed; (3) and the practice is defensible, on the principle of utility as well as of safety. We know that the head of a child, in the beginning of the seventh month, does not measure more than two inches and a half in its lateral diameter; two and three quarters in the end of that month; and three in the eighth month. We know further, that there is no reason to expect that a full grown fœtus can be expelled alive, and very seldom, even after a severe labour, dead, through a pelvis whose dimensions are not above two inches and a half: and lastly, we have many instances, where children born in the seventh month have lived to old age. Whenever, then, we have by former experience ascertained beyond a doubt, that the head at the full time must be perforated, it is no longer a matter of choice, whether, in succeeding pregnancies, premature labour ought to be induced. It is certainly easier for the mother than the application of the crotchet, and no man can say that it is worse for the

(3) This practice was first adopted about the middle of the last century, by Dr. Macauley in London, and was afterwards followed out by others. About twenty years after this, it was proposed on the continent by M. Roussel de Vauzesme; and lately Mr. Barlow, in the eighth vol. of *Med. Facts*, &c. has given several cases of its success.—See also *Med. and Physical Journal*, vols. XIX. XX. and XXII. It may not be improper for me to mention as a caution, that I have been called to consider the expediency of evacuating the liquor amnii, where there was no deformity of the pelvis, but merely a collection of indurated fœces in the rectum.

child.* All the principles of morality, as well as of science, justify the operation; they do more, they demand the operation. The period at which the liquor amnii should be evacuated must depend upon the degree of deformity; and where that is very great, it must be performed at a period so early, as to afford no prospect of the child surviving: it must be done in this case to save the mother, or sometimes it may be requisite to use the lever, even when labour has been prematurely brought on. There are cases, and these cases are not singular, where the bones gradually yield, and become so distorted, as at last to prevent even the crotchet from being used. Now, granting a succession of pregnancies to take place in this situation, it follows as a rule of conduct, that if the deformity be progressive, we should regularly shorten the term of gestation, exciting abortion, even in the third month, if necessity requires it, and treating the case as a case of abortion, enjoining strict rest, and plugging the vagina to save blood. Some may say, Shall we thus, by exciting abortion, destroy many children to save one woman? This objection is more specious than solid. Those who make it would not, in all probability, scruple to employ the crotchet frequently; and where is the difference to the child, whether it be destroyed in the third or in the ninth month? How far it is proper for women in these circumstances to have children, is not a point for our consideration, nor in which we shall be consulted. I would say that it is not proper; but it is no less evident, that when they are pregnant we must relieve them.

* It has been proposed, by low diet, to restrain the growth of the child, but this is a very uncertain and precarious practice.

CHAPTER VII.

Of Impracticable Labour.

IT may be urged against the reasoning in the conclusion of the last chapter, that the cæsarean operation ought to be performed; and, doubtless, in cases of extreme deformity, if the proper time for inducing labour be neglected, it must be performed. But the danger is so very great to the mother, that this never can be a matter of choice, but of necessity. In balancing the cæsarean operation against the use of the crotchet or the induction of abortion, we must form a comparative estimate of the value of the life of the mother and her child. By most men, the life of the mother has been considered as of the greatest importance; and therefore, as the cæsarean operation is full of danger to her, no British practitioner will perform it, when delivery can, by the destruction of the child, be procured *per vias naturales*. As, in many instances, the woman labours under a disease found to be hitherto incurable, it may be supposed, that the estimate will rather be formed in favour of the child. But, in the first place, we cannot always be certain that the child is alive, and that the operation is to be successful with respect to it; and, in the second place, it ought to be considered, how far it is allowable, in order to make an attempt to save the child, to perform an operation, which, in the circumstances we are now talking of, must, according to our experience, doom the mother to a fate, for which, perhaps, she is very ill prepared.

There are, I think, histories of eighteen cases, where this operation has been performed in Britain; out of these only one woman has been saved,* but ten children have been preserved. On the continent however, where the operation is performed more frequently, and often in more favourable

Vide a case by Mr. Barlow, in *Med. Records and Researches*, p. 154.

circumstances, the number of fatal cases is much less.* If we confine our view to the success of the operation in this island, we must consider it as almost uniformly fatal to the mother. This mortality is owing, not only to the injury done to the cavity of the abdomen, and the consequent risk of inflammation, even under the most favourable circumstances, and with the best management; but also to the morbid condition of the system, at the time when the operation was performed; many of the women being affected with malacosteon, which would in no very long time have of itself proved fatal. From this unfavourable view, it may perhaps arise as a question, whether nature, if not interfered with, might not, as in extra-uterine pregnancy, remove by abscess the child from the uterus? It has been said that this event has taken place, but I do not recollect one satisfactory case upon record. Whenever this has happened, the uterus has either been ruptured, and the child expelled into the cavity of the abdomen; or, in a very great majority of the instances, the child has, evidently from the first been extra-uterine. We are therefore led to conclude, that the mother who cannot be delivered by the crotchet, must submit to the cæsarean operation, or must inevitably perish, together with the fruit of her womb.

It has been asserted by Dr. Osborn, that this operation can seldom if ever be necessary; never where there is the space of an inch and a half from pubis to sacrum, or on either side: and that he himself has, in a case where the widest side of the pelvis was only an inch and three quarters broad, and not more than two inches long, delivered the woman, by breaking down the cranium, and turning the basis of the skull sideways. As the patient recovered, and afterwards, I think died in the country, where she could not be examined, we cannot say to a certainty what the dimensions of the pelvis were. Dr. Osborn must only speak according

* According to Dr. Hull, we had when he published, at home and abroad, records of 231 cases of this operation, 139 of which proved successful. Vide Translation of M. Baudelocque's Memoir, p. 233.

to the best of his judgment. I have the highest respect for his character and for his works, and nothing but irresistible arguments could make me doubt his accuracy. But from the statement which I have already given of the dimensions of the head, when broken down at the full time, as well as from the experiments of Dr. Hull, and the arguments of Dr. Alexander Hamilton and Dr. Johnson, I am convinced that there must be some mistake in Sherwood's case. Had the child been brought by the face, there might have been room for it to pass, so far as the short diameter of the passage is concerned; but the lateral diameter is too small for the head, if of the usual size, to pass, in that which I consider as the most favourable position. In the cases related by Dr. Clarke,* who is a practitioner of the highest authority, we are informed that the short diameter of the passage did not exceed an inch and a half, but we are not informed of the lateral extent. As the women both recovered, the precise dimensions and construction of the pelvis cannot be determined. It is likewise much to be regretted, that the diameter of the cranium, or cranium and neck, in the state in which they may have been supposed to come through the passage, was not taken after delivery. Where, and only where it can be ascertained, that the head placed in the position in which it was drawn through the pelvis, does not form, in any part, a substance measuring more than an inch and a half by two inches or three inches, it is allowable to infer, that the cavity through which it passed may have been as small as that.

Finally, this is a question on which, although we may lay down a general rule, we must admit of some exceptions; for a premature, or a very small child, may be brought through a pelvis which will not permit, by any means, an ordinary sized fœtus to pass. But it behoves us, in our reasoning, to judge every child to be at the full time, unless we know the contrary, and to make an estimate on the average magnitude; and until the contrary is proved, by dissection of the

* Vide Dr. Osborn's Essays, p. 203, and London Med. Journal, VII p. 40.

mother, or careful and rigid measurement of the child after delivery, I must hold to the position formerly laid down, that the crotchet cannot be used when the child is of the full size, unless we have a passage through the pelvis, measuring an inch and three quarters in the short diameter, and nearly, if not altogether, three inches in the length, or, if the child be small and soft, an inch and a half broad, and two inches and three quarters long. (1)

The operation itself, although dangerous in its consequences, and formidable in its appearance, is by no means difficult to perform. Some advise the incision to be made perpendicularly in the *linea alba*, others transversely in the direction of the fibres of the *transversalis* muscle. Perhaps the precise situation and direction of the wound must be regulated by the circumstances of the case, and the shape of the abdomen; but in general, I apprehend that the transverse wound will be most eligible. The length of the incision, through the skin and muscles, ought to be about six inches; and if a vessel bleed, so as to require the ligature, it will be proper to take it up before proceeding farther. The uterus is next to be opened by a corresponding incision; and as the fundus, owing to the pendulous shape of the abdomen, is the most prominent part, the incision will in general be

(1) I believe few will dispute, that the precise deformity requiring the *cæsarean* operation, must, to a certain extent, be modified by the dexterity of the operator. I shall suppose, that a surgeon, in a remote part of the country, far from assistance, is called to a patient whose child is evidently alive, and whose pelvis measures just as much as would render it barely possible to use the crotchet, were he dexterous; but he has not a belief that he could accomplish the delivery with that instrument. Would that man be wrong in performing the *cæsarean* operation? In such a case I would say, upon the principle that a man is to do the most good in his power, that if no operator more experienced can be had, within such time as can be safely granted, the surgeon ought, after taking the best advice he can procure, to perform the *cæsarean* operation, by which he will save one life at least. By the opposite conduct, there is ground to fear that both would be lost. In a case related in the *Jour. de Med.* for 1780, a woman in the village of Son had the child turned, and even the limbs separated, without delivery being accomplished; four days afterwards, the *cæsarean* operation was performed, and the woman died.

made there, unless the external wound be made lower than usual. The child is next to be extracted, and immediately afterward the placenta. One assistant is to take the management of the child, whilst another takes care to prevent the protrusion of the bowels. In this part of the operation, although pretty large vessels are divided, yet the hemorrhage is not great, and has scarcely ever been fatal. The external wound is now to be cleaned, its sides brought together, and kept in contact by a sufficient number of stitches passed through the skin alone, or the skin and muscles, avoiding the peritoneum. Adhesive plasters are to be placed carefully in the intervals; and a bandage, with a soft compress, being applied, the patient is to be laid to rest. An anodyne should be given, to diminish the shock to the system; and our future practice must, upon the general principles of surgery, be directed to the prevention or removal of abdominal irritation and inflammation. The patient may die, although there be very little inflammation of the peritoneum. It has been proposed by Dr. Hull, to whose work I refer for more particular information, to operate as soon as the os uteri is dilated, and before the membranes burst, in order that the wound of the uterus may contract into a smaller size.

In order to supersede the cæsarean operation, and even to avoid the use of the crotchet, it was many years ago proposed to divide the symphysis pubis, in expectation of thus increasing the capacity of the pelvis. This proposal was founded on an opinion, that the bones of the pelvis, either always or frequently, did spontaneously separate, or their joinings relax during gestation and parturition, in order to make the delivery more easy. In deformity of the pelvis, the symphysis was first divided by a knife during labour, by M. Sigault, in 1777, assisted by the ingenious M. Alphonse Le Roy. The operation was afterwards repeated on the continent, with various effects, according to the degree of deformity and extent of the separation. It has only once* been adopted in this country, because it is not only dangerous in itself to the

* Vide case by Mr. Welchman, in Lond. Med. Journal for 1790, p. 46.

mother, but also of limited benefit to the child. We have already seen, that there is a certain degree of deformity of the pelvis, which will prevent a child at the full time, and of the average size, from passing alive, or with the head entire. Now, in a case where it is barely impracticable to use the lever or forceps, and where it just becomes necessary to open the head, the division may perhaps save the child, and with less danger to the mother than would result from the cæsarean operation, which is the only other chance of saving the infant. If we increase the contraction of the pelvis beyond this degree, then the chance of saving the child is greatly diminished; and the extent to which the bones must be separated, to accomplish delivery, would, in all probability, be attended with fatal effects. In such a case, the crotchet can be employed with safety to the mother, and continues to be eligible, until we find the space so small as to require the cæsarean operation; and in this case, the division can do no good. It cannot even make the crotchet eligible, owing to the shape of the pelvis in malacosteon, and the great mischief which would be done to the parts after the division, by the necessary steps of the instrumental delivery. There is only one degree of disproportion, then, betwixt the head and the pelvis, which will admit of the division, but the smallest deviation from this destroys the advantage of the operation. Now, as this disproportion is so nice, we cannot in practice ascertain it; for although we could determine, within a hundredth part of an inch, the capacity of the pelvis, yet we cannot determine the precise dimensions of the head, and thus establish the relation of the two. On this account, the division of the symphysis pubis cannot be adopted with advantage, either to the mother or child.

CHAPTER VIII.

Of Complicated Labour.

ORDER FIRST.

DURING labour, there is always a slight discharge of bloody slime, when the membranes begin to protrude; for the small vessels of the decidua, near the cervix uteri, are opened. In some cases a very considerable quantity of watery fluid, tinged with blood, flows from the womb, but this is attended with no inconvenience. It may happen, however, that pure blood is discharged, and that in no small quantity. If this take place in the commencement of labour, it differs in nothing from those hemorrhages which I have formerly considered. But occasionally the flooding does not begin, till the first stage of labour be nearly or altogether completed. If the membranes be still entire, it proceeds certainly from the detachment of part of the placenta or decidua, and often is connected with unusual distension of the uterus, from excessive quantity of liquor amnii, or with ossification of the placenta. If the membranes have broken, then we must consider the possibility of its proceeding from rupture of the uterus, and must inquire into the attending symptoms. Sometimes it will be found to proceed from tedious and exhausting labour, from improper exertion, or rude attempts to dilate the os uteri, or alter the presentation; or it may be caused by rupture of the umbilical cord. Now, in this order of labours, the practice is very simple, and admits of little difference of opinion. For every experienced practitioner must admit, that when hemorrhage is considerable, and is increasing or continuing, the only safety consists in emptying the uterus. If the pains be smart, frequent, and effective, the labour advancing regularly, and there be reason to suppose that it will be finished before the hemorrhage have continued so long as to produce injurious effects, we may safely trust to nature. We must keep the patient very cool, and in a state of perfect

rest. But if the pains be weak, ineffectual, and rather declining than increasing, whilst the hemorrhage is rather increasing than diminishing, we must deliver the woman, either by turning the child, or applying instruments, according to the circumstances of the case, and the situation of the head. (*d*)

ORDER SECOND.

When hemorrhage takes place from the lungs or stomach during parturition, we ought to have recourse, in the first place, to blood-letting, or such other means as we would employ, were the patient not in labour. If the hemorrhage continue violent, or be increased by the pains of parturition, we must consider, whether artificial delivery, or a continu-

(*d*) Uterine hemorrhage may occur in any stage of labour. It is however most serious when it takes place in the first stage. If the flooding be profuse, and the progress of parturition slow, we must proceed to immediate delivery. Nothing else will be of service. Other hemorrhages may be checked either by the contraction of the vessels, or by the formation of coagula. But in uterine floodings, these attempts of nature prove wholly nugatory. We begin by dilating the os tincæ. To do which, we at first insinuate one or two fingers into it, using at the same time some slight stretching force. By these means, if it be not very rigid and intractable, it will yield sufficiently in the course of an hour, more or less, to allow the introduction of the hand in a conical form. We now, having overcome the chief obstacle, bring down the feet and effect delivery. The forceps, I am aware, have been recommended, in preference to turning, in such cases. They can, however, hardly ever be applied with advantage where labour is so little advanced. It has also been proposed to rupture the membranes in order that the uterus may contract round the body of the child, and thus suppress the hemorrhage. This suggestion cannot be too much discountenanced. If adopted, it would lead to a rash experiment which could only succeed accidentally, and which in its failure would aggravate the difficulty, and might prevent altogether the turning of the child.

When hemorrhage happens in the first stage of labour, we should ascertain whether it be not owing to the partial or entire attachment of the placenta over the cervix and os uteri, loosened by the effects of parturition. This is readily done by actual examination. These hemorrhages are more urgent than from any other cause. We cannot here delay delivery for a moment. The practice is nearly the same as in other cases of flooding. We dilate the os tincæ, and bring away the child by the feet as expeditiously as possible, without, however, resorting to violence or rash precipitation. In introducing the hand into the uterus, care is to be observed not to thrust it through the placenta, nor to rupture unnecessarily its attachments. We therefore pass the hand to one side of it. ED.

ance of the natural process, will be attended with least exertion and irritation, and consequently with least danger, and we must act accordingly.

ORDER THIRD.

Syncope may proceed from various causes, such as hemorrhage, or rupture of the uterus; but these cases have been already, or will be, considered. It may proceed from a delicate nervous constitution, from long continued labour, from particular states of the heart or stomach, and from passions of the mind. A simple paroxysm of fainting, unless it proceed from causes which would otherwise incline us to deliver, such as tedious labour, flooding, &c. is not to be considered as a reason for delivering the woman. We are to employ the usual remedies, and particularly keep the person in a recumbent posture. But if the paroxysms be repeated, whatever their cause may be, we ought to deliver the woman, if the state of the os uteri will permit. We must be very careful to prevent hemorrhage, after the expulsion of the child.

ORDER FOURTH.

Convulsions may occur, either during pregnancy or labour, and are of different kinds, requiring opposite treatment. One species is the consequence of great exhaustion, from excessive fatigue, tedious labour, or profuse hemorrhage. This makes its attack without much warning, and generally alternates with deliquium, or great feeling of depression and debility; the muscles about the face and chest are chiefly affected, and the pulse is small, compressible, and frequent, the face pale, the eye sunk, the extremities cold. The fits succeed each other pretty quickly, and very soon terminate in a fatal syncope. This species naturally requires that we should, first of all, check the farther operation of the exciting cause, by restraining hemorrhage, or preventing every kind of exertion, and then husband the strength which remains, or recruit it by cordials. Opiates are of great service. Delivery may become necessary.

Hysterical convulsions* are more common during gestation, than during labour. They are distinguished, by being preceded by a timid state of mind, and attacking pretty suddenly; there is evident appearance of globus or struggling about the throat. There is no foaming at the mouth, no working with the tongue, and indeed very little distortion of any of the muscles about the face. The person also sometimes utters, during the fit, a kind of crowing noise; and when she recovers; she is generally, but not always, sensible of having been ill. Occasionally there is a tendency to faint, although there have been little exhaustion. Rest and antispasmodics are indicated; but if the fit continue, or is renewed, venesection will be proper. In some cases the patient soon recovers without any remedy, and has no return of the complaint.

The most frequent species of puerperal convulsions, however, is of the epileptic kind, which occurs fifty times for once that the others appear. We have very generally some precursory signs, such as pain of the head, indistinct vision or blindness, ringing in the ears, and appearance of fire flashing before the eyes. Sometimes the patient sighs deeply, or has violent shaking of the muscles, or acute pain in the stomach, or great sickness. The eye is suffused, the countenance red, and the pulse slow and oppressed. When the attack comes on, which is often very soon after these preludes appear, the muscles are most violently convulsed, and the face dreadfully distorted,† and often swollen. The tongue is much agitated, and is very apt to be greatly injured by the teeth; foam issues from the mouth, and the convulsive inspiration often draws this in with a “hissing noise.” This attack may end at once in fatal apoplexy, but generally the patient recovers, and is quite insensible of having been ill. Soon, however, the fits are renewed; and if they do not prove fatal, or

* The face, in hysterical convulsions, is generally pale; and in many cases, the patient can for a few seconds be roused so far as to look up, or even utter a monosyllable, or swallow a little liquid

† Mr. Fynney gives a case, where the lower jaw was luxated during convulsions, which came on in the birth of a second child, or twin. *Med. Comment.* vol. IX. p. 380.

are not averted by art, they recur with the regularity of labour pains, becoming more and more frequent as they continue. The woman appears to have no labour pains, yet the os uteri is affected, and sometimes the child is expelled.

Apoplexy may take place at the commencement of labour or during gestation, without convulsions. In the latter case, the os uteri is rarely affected; but in a few instances it has been found dilated, if death did not take place instantaneously. Copious blood-letting is the principal remedy in this case.

Convulsions may occur in any period of labour, or before it has begun, or after the delivery of the child; and in this last case, are sometimes preceded by great sickness or oppression at the stomach. Dr. Leak relates the case of a patient who had ten or eleven of these fits; the abdomen was swelled and tense, and she vomited phlegm mixed with blood, which probably came from the tongue. She recovered by means of blood-letting and clysters.

Puerperal convulsions seem to be different from common epilepsy, for they recur at no future time, except perhaps in a subsequent pregnancy. They take place in greater number in a given time, than epilepsy does in general. They often recur exactly like labour pains, or are accompanied by them; or if the patient be in a state of stupor, she frequently has the countenance distorted at intervals, accompanied with some uterine action. They are preceded by different symptoms, and never by an aura; and the patient usually recovers sensibility much sooner, and more completely during the intervals, than in epilepsy. The organs of sense, particularly the ear, are often preternaturally sensible. Sometimes the child is unexpectedly born during a fit.

Convulsions, of the kind I am considering, evidently are connected with gestation or parturition; they occur at no other time. I shall not enter into the theory, but state the practice, which is of more consequence. The first object is, to prevent the patient from injuring the tongue, by inserting a piece of wood into the mouth; this occupies no time. Next, we bleed the patient, and, if the circumstances of the case permit, we should open the jugular vein. We must not spare

the lancet. All our best practitioners are agreed in this, whatever their sentiments may be with regard to the nature of the disease, or to other circumstances. We must bleed once and again, whether the convulsion occur during gestation or pregnancy.* There is more danger from taking too little blood, than from copious evacuation. Often in a short time, several pounds of blood have been taken away with ultimate advantage. Blood-letting also tends to relax the os uteri. Next, we administer a smart saline clyster. The head is then to be shaved and blistered; a blister is proper, although the fit have gone off. A smart dose of calomel, or solution of salts, may also be given with advantage, when the person can swallow, especially if there be little tendency to labour. We must also attend to the bladder, that it be emptied, for its distension alone as sometimes brought on convulsions.†

When we find that the os uteri begins to open or to relax, which may take place although we have no distinct labour pains, we must introduce the hand, and slowly dilate it, and deliver the child. I entirely agree with those who are against forcibly opening the os uteri;(1) but I also agree with those who advise the woman to be delivered as soon as we possibly can do it without violence. (2) There is, I am con-

* La Motte mentions a case, 225, where a woman in the last five months of pregnancy, was bled eighty-six times. Sometimes 2 oz. would relieve her—By modern practitioners, from 40 to 80 oz. have been taken with advantage, in a case of puerperal convulsions.

† La Motte, 223, 224.—Leak relates a case, where it produced *subsultus tendinum*, and excessive pain at the pubis. Vol. II p. 344.

(1) Dr. Bland is rather against delivery, and for trusting to nature.—Dr. Garthshore, Jour. VIII. 359, says, more women have recovered of this, who were not delivered, than of those who were violently delivered.—Dr. Denman concludes, that women, in the beginning of labour, ought not to be delivered, II. 381, and admits of it only when it can be done easily.—Baudelocque, says, that we ought not to be in haste to deliver, and never to do it when nature seems to be disposed to do it herself.—Dr. Hull, Obs. &c. p. 245, says, that we should trust to the usual remedies, till the os uteri be easily dilatable, or be dilated, and then deliver. He informs me, that in every case which proved fatal, there was no dilatation of the os uteri.

(2) Dr. Osborn, p. 50, says, that no remedy can be used with any reasonable expectation of benefit till delivery is completed, and that there-

vinced, no rule of practice more plain or beneficial.* Deliver does not, indeed, always save the patient, or even prevent the recurrence of the fits, but it does not thence follow that it ought not to be adopted.

Internal remedies have been advised, such as opium and musk, and camphor; but experience does not establish their utility, nay, where there is much fulness of the vessels, these medicines may do harm.

If the fits have been only apprehended, but have not taken place, then we may use remedies as preventives. The most beneficial treatment is, to empty the vessels and the bowels. When there are evident symptoms of disordered stomach, a gentle emetic has been advised; but I have never seen it administered myself, and am, from its effects on the head, not partial to its exhibition. Where we have a tendency to œdema, diuretics, particularly the digitalis, preceded by venesection and laxatives, may be useful. When a violent pain in the stomach takes place, we should bleed and give an opiate. I wish it to carefully remembered, that when we have head-ach, or any other symptoms indicating a tendency to convulsion, the lancet is necessary. Blood-letting can seldom indeed do harm, it may do much good; and if this book serve only to impress this fact on the mind of one reader, I will not regret having written it.

When symptoms of nervous irritation exist, without any determination to the head or fulness of vessels, then, after bleeding, opiates may be of advantage.† Camphor has been

fore it is our indispensable duty to effect it in the quickest possible manner. Dr. J. Hamilton, *Annals*, V. 318, et seq. says, that when convulsions occur during labour, delivery is to be accomplished as soon as possible — Dr. Leake, that when they seem to proceed from the uterus, speedy delivery is useful, but when from “any cause independent of the state of pregnancy,” delivery would be hurtful, II. 348.

* Even evacuating the liquor amnii has, M. Baudelouque admits, been of service, § 1108, 1111. In one case the os uteri was hard and callous, it was divided, the child speedily born, and the woman immediately became calm, 1112.

† Opiates have been strongly recommended by some practitioners, particularly Dr. Bland, *Jour.* vol. II. p. 328, &c — Dr. Hamilton as strongly prohibits them. *Annals of Med.* vol. V

strongly recommended by Dr. Hamilton, as the most powerful internal remedy which can be prescribed; but I cannot, from my own observation, say much respecting its virtues.(e)

ORDER FIFTH.

The uterus may be lacerated during labour, under different circumstances, and from various causes. Any part of it may be torn, but generally the rupture takes place in the cervix, and the wound is transverse. Sometimes the uterus is entire, and the vagina alone is torn. This may happen during any stage of labour, and even before the membranes burst,* but this is uncommon. It may take place when the head has fully entered the pelvis, or in the moment when the child is delivered. (3)

(e) I can add little, either to the description or to the treatment of this terrible disease. I have seen not many cases of it. I believe that it is a rare occurrence in this country. In the few cases which have come under my care, I have employed with very great advantage *copious blood-letting*. To this remedy I resorted not less from the indications which seem most urgently to call for it, than from the strenuous recommendation of it by professor Hamilton. To be useful, it must be very freely employed. There is, perhaps, no disease where the lancet may be pushed further. The only internal medicines which I have found serviceable are active purges. Opium is undoubtedly prejudicial. I recollect to have heard Dr. Hamilton *emphatically* declare that he never knew a woman to recover to whom it had been given. After all, our hopes should rest chiefly on a speedy delivery. By this we certainly remove the exciting cause. If the os uteri, therefore, does not readily dilate, which too often happens, we must force it and rupture the membranes, and should the head have not entered well into the passages, bring down the feet. This is the advice of Dr. Hamilton from whom, on such subjects, it is scarcely ever safe to differ. After delivery, to prevent a recurrence of the convulsions, the woman ought to be kept cool, occasionally purged, and, if there be much determination to the head, a blister should be applied. ED.

* Vide Mem. of Med. Soc. vol. II. p. 118.

(3) In a case which I saw, the placenta was retained by a spasmodic stricture, though the child was expelled; every allowable attempt was made to extract it, but in vain. The uterus acted from the os uteri towards the rent, which was at the fundus. The woman died. The placenta was found still in utero. The intestines were inflamed.—See also Crantz, de Utero Rupto, p. 22; and Dr. Cathral's case in Med. Facts, vol. VIII. p. 116

The uterus may be ruptured, by attempts rashly made to turn the child;* or after the water has been long evacuated, some projecting part of the child may so affect a portion of the uterus, as to make it tear. A certain set of fibres may also be suddenly and spasmodically contracted, and laceration may thus take place. In these cases, there is often very little warning, and the accident may happen when we are just in expectation of a happy termination of the labour. In a case detailed by Dr. Douglas, (p. 54,) the head of the child was resting on the perinæum, when the lady, who had been subject to cramp, uttered a violent cry, and the head receded. The child was delivered, but the patient died. Mr. Goldson's patient complained of cramp in the leg, in the intervals of the labour pains; and in the instant when the rupture happened, she exclaimed "The cramp!" Dr. Monro's patient, (Works, p. 677,) was sitting in a chair, when she suddenly screamed, and the uterus was lacerated; she was not delivered, but lived from Tuesday till Friday. Rigidity of the os uteri may also be a cause of laceration.† It dilates very slowly, requires great exertion of the uterine fibres, and the patient suffers much pain. The uterus may at last be torn, even although the head has partly descended into the pelvis, and the pelvis be large. In this case the liquor amnii is usually discharged before the rupture takes place. The most frequent cause, however, of this accident, is a disproportion between the size of the head and the capacity of the pelvis, by which a portion of the cervix uteri is pinched between the head and the pelvis, and fixed so, that the action of the uterus is directed against this spot, rather than the os uteri. The woman feels very severe pains, either in the back or at the pubis, which, during the action of the uterus, augments to an extraordinary degree, and then the part gives way. Another way in which the cervix may be lacerated, is by the linea iliopectinea being so sharp,‡ that when the uterus is pressed against it, the part

† A fatal case of this kind is related by Mr. Dease.—One more fortunate in the issue, is inserted in Mem. of Med. Soc. vol. IV p. 253.

‡ Perfect's Cases, vol. II. p. 439 — Hamilton's Cases, p. 138.

* In a case of this kind, the line was on one side, as sharp as a fruit

are either cut through or so much acted on, that they are in a manner killed, and give way, having a sphacelated appearance. In some cases the rectum, but much more frequently the bladder, is opened.

Now, from this view we learn, that those women are most liable to rupture of the uterus, who are very irritable, and subject to cramp; or who have the pelvis contracted, or its brim very sharp; or who have the os uteri very rigid, or any part of the womb indurated. Scholzius relates a case, where it was produced by scirrhus of the fundus; and Friedius one, where it was owing to a carneo-cartilaginous state of the os uteri. Sometimes the uterus seems to be predisposed to this accident, by a fall or bruise. Riedlinus relates one instance of this. Behling, Steidele, and Perfect, furnish us each with another. Salmuthus considers a thinness of the uterus as a predisposing cause of rupture; and Dr. Ross* relates a case where it seemed to have this effect, the womb not being above the eighth part of an inch thick, and tearing like paper.

We are led to anticipate laceration, when the patient is restless, and complains of very severe local pain, subject to great exacerbation, and attended with a very acute or tearing sensation. The pains are both violent and frequent, and usually do not produce a great effect on the os uteri, which is often very rigid. These symptoms are still more alarming, if the liquor amnii have been fully evacuated. When the accident does happen, the woman feels something give way within her, and usually suffers, at that time, an increase of the pain. The presentation disappears more or less speedily, unless the head have fully entered the pelvis, or the uterus contract spasmodically on part of the child, as happened in Behling's patient. † The pains go off as soon as the child passes through the rent into the abdomen; or if the presentation be fixed in the pelvis, they become irregular, and gradually decline. The passage

knife, and a cartilaginous knob projected from the symphysis. The bladder was torn.

* Annals of Med. vol. III. p. 277.

† Haller's Disput. tom. III. p. 477.

of the child into the abdominal cavity is attended with a sensation of strong motion in the belly, and is sometimes productive of convulsions. The shape of the child can be felt pretty distinctly through the abdominal coverings.

The patient after this accident soon begins to vomit a dark coloured fluid, the countenance becomes ghastly, the pulse small and feeble, the breathing is oppressed, and frequently the patient cannot lie down. Sometimes the intestine protrudes through the wound in the uterus, and has even been strangulated in it. These symptoms do not all appear in every case, nor come on always with the same rapidity. In Dr. Ross's patient, although the child escaped through a rent in the vagina into the cavity of the abdomen, and though the nature of the case was ascertained, yet no hemorrhage, fainting, nor bad symptoms, took place; and the child being delivered, the woman recovered.

If the patient be not speedily relieved, she becomes very restless, tosses in the bed, and vomits frequently; complains of pain in the belly, which becomes swelled, the pulse is rapid, the extremities become cold, and the strength sinks. In every case that I have seen, the intestines were chiefly affected, being much inflamed. The interval which elapses between the accident and death, is various; but generally, whether the patient be delivered or not, she dies within twenty-four hours, often in a much shorter time. Steidele, however, relates a case, where the patient lived till the twelfth day; Dr. Garthshore's patient lived till the twenty-sixth day; and in the Coll. Soc. Havn. vol. ii. p. 326, there is the case of a woman, who, after being delivered, lingered for three months.

Different opinions have been held respecting the best mode of treatment. Some have advised the performance of the cæsarean operation, some delivering *per vias naturales*, and others leaving the case to nature. We have instances of all these methods being successful; but the delivery, by turning the child, has advantages over the other modes, and certainly ought to be resorted to when easily practicable. When the os uteri is dilated before the accident takes place,

as is usually the case, and the hand can, without much difficulty be introduced, it is to be passed through the os uteri and the rent in the uterus into the abdominal cavity, in search of the child's feet, which are to be brought down, and the case managed in the same way as in presentation of the feet. When the placenta is extracted, we are to introduce the hand again, to ascertain that no part of the intestines have protruded through the wound. This process is always easy, when the rent is in the cervix uteri or the vagina.

But when the os uteri is little dilated before the accident happens, and cannot be opened without great irritation, which is, indeed, not often the case; or when the uterus is spasmodically and violently contracted between the rent and the os uteri, which may happen if the fundus be lacerated; I am inclined to join with those, who consider attempts to deliver as adding to the danger. In such circumstances, we must either perform the cæsarean operation, or leave the case to nature. If we have been called early, when the child is yet alive, and before the abdominal viscera have been much irritated by the presence of the fœtus, we are warranted to extract the child by a small incision. (4) If some time, however, have elapsed, then such irritation is often given, as renders it doubtful, if the additional injury of the operation could be sustained. On the other hand, if little irritation be given, and the woman is tolerably well, there is room to hope, that a natural cure may be accomplished, as in extra-uterine pregnancy; and therefore, as the child cannot be saved now, it may be more prudent to trust to nature. (5)

(4) Vide successful case by Thibault, in *Jour. de Med.* for May 1768.—M. Baudelocque relates a case where the operation was twice performed on the same patient, for the same cause. In *Essays Phys. and Lit.* vol. II. p. 370, is a case most incredible, where both the uterus and abdominal integuments were torn during labour. The child escaped, and the woman recovered.

(5) Astruc, liv. V. chap. iv. quotes a case, where the child remained in the abdomen for twenty-five years.—In another case, the midwife felt the child's head, but after a severe pain it disappeared, and the woman com-

The cases which admit most easily of delivery, are those where the rent is situated in the cervix uteri or vagina; and laceration of the vagina is less dangerous than rupture of the uterus, (6) provided the bladder be not injured. I do not think it necessary to make any further remarks on the laceration of the vagina, as distinct from that of the womb.

When the head is engaged in the pelvis, and cannot recede after the womb is torn, we have other symptoms, indicating rupture of the uterus, or at least the necessity of using

plained only of weight in the belly. It was expelled by abscess. *Hist. de la Societ  de Med.* tom. I. p. 388.—In Dr. Bayle's case, the child was retained twenty years. *Phil. Trans.* No. 139, p. 997.—In Mr. Birbeck's case, the child was discharged by the navel. *Phil. Trans.* vol. XXII. p. 1000.—Bromefield's patient did not get rid of the child, but she lived for many years, and after death the rent was visible. *Phil. Trans.* vol. XLI. p. 696.—In Dr. Sym's patient, the process for expelling the child by abscess was in a favourable train, when, by imprudent exertion, fatal inflammation was excited. *Med. Facts*, vol. VIII. p. 150.—Bartholin also gives cases.—Le Dran relates an instance, where the uterus was ruptured on the 23d of April. On the 13th of May the placenta was expelled; on the 16th a tumor appeared at the linea alba, which was opened, and a child extracted; the woman recovered. *Obs.* tom. II. ob. 92.

(6) In a case communicated to Dr. Hunter, the forceps were pushed through the cervix uteri, and the intervening portion between the laceration, and the os uteri was afterwards cut. The labour was finished naturally, and the woman recovered. *Med. Journ.* vol. VIII. p. 368.—Dr. Douglas relates the successful case of Mrs. Manning, in his *Observations*, p. 7.—Dr. A. Hamilton gives a fortunate case, where delivery saved the mother, *Outlines*, p. 348, and Dr. J. Hamilton, relates one in his *Cases*, p. 138, where the rent had contracted so much, as to give some difficulty to the delivery. The case is instructive.

M. Coffinieres gives a memoir on this subject, in the *Recueil Period.* tom. IV. in which he remarks that laceration near the vulva is easily cured; at the upper lateral part of the vagina, it is dangerous; and at the anterior and posterior part, near the bladder and rectum, it is generally mortal; but in one case the woman recovered, although the hand could be introduced into the bladder. The woman had incontinence of urine afterwards. In his eighth case, the child lay transversely, and the vagina was torn, and filled with clots; but the peritoneum was still entire, and therefore the wound did not enter the abdomen. The uterus was supported with a napkin until the child was turned. Dangerous symptoms supervened, but the woman recovered. He gives fifteen cases, and of these six recovered. Several were produced by attempts to reduce the arm of the child.

instruments. The strength sinks, the pains become useless or go off, the patient vomits, &c.

When, from precursory symptoms, we expect that laceration is about to take place, we must accelerate labour, either by turning, or the use of instruments, according to circumstances. This is more necessary if the patient has formerly had the uterus torn. (*f*)

ORDER SIXTH.

Suppression of urine may take place during labour, in consequence of the head of the child being locked in the pelvis; or from a kind of paralytic state of the bladder, produced by long retention of the urine; or by a small stone, or quantity of mucus, obstructing the urethra. It produces tenderness, and great pain, in the hypogastric region, which is also swelled. The pain is constant, but is increased during every effort of the abdominal muscles to bear down, because then the bladder is pressed. It is injurious in so far as it tends to impair the uterine action, and it is dangerous on account of the risk of the distended bladder being ruptured by the contraction of the abdominal muscles, or its giving way by a gangrenous rent. The bad symptoms consequent to this event do not always come on instantaneously, and sometimes the bladder still retains a little urine. In a case related by Mr. Hey, in the fourth volume of *Medical Observations and Inquiries*, they did not take place till the second day. The patient was thirsty, vomited, had a frequent desire to void the urine, which she did very suddenly, but not more than a tea cupfull at once. The pulse was quick, the belly swelled, and pressure gave her pain. She died about the eighth day, and the bladder was found to be ruptured at its upper part.

When the urine cannot be passed by the voluntary efforts of the woman, aided sometimes by pressing up the head of the child, the catheter must be introduced. The perforations of the instrument, however, ought to be large, as a slimy

(*f*) Vide a preceding note relative to this subject, page 201. E.D.

tough mucus in the urethra, sometimes fills completely those of the ordinary size. If the head should be so jammed in the pelvis, as to prevent the introduction of the catheter, the woman must be delivered.

In some cases, although no water is made for a long time, yet no inconvenience is felt; and when the catheter is introduced, very little water is evacuated. This depends upon a diminished secretion; and although, of itself, it cannot determine us to accelerate delivery, yet, should it be attended with other bad symptoms in tedious labour, it may form an additional argument for interfering, as then the functions are becoming impaired, and effusion may take place into some of the cavities.

BOOK III.

Of the Puerperal State.

CHAPTER I.

Of the Treatment after Delivery.

IMMEDIATELY after the placenta is expelled, the finger ought to be introduced into the vagina, to ascertain that the perinæum or recto-vaginal septum be not torn, and that the uterus be not inverted.

Then, if the woman be not much fatigued, she is to turn slowly on her back, and a broad bandage is to be slipped under her, which is to be spread evenly, and pinned so tightly round the abdomen, as to give a feeling of agreeable support. This bandage is made of linen or cotton cloth; and it is usual to place a compress over the uterus, but this is not essential. Next, the wet sheet is to be pulled from below her, and an open flannel petticoat is to be put on. It has a broad top band, and is introduced and pinned like the bandage. A warm napkin is then to be applied to the vulva, and the woman laid in an easy posture, having just so many bed-clothes as to make her comfortable. If she desire it, she may then have a little panado, after which we leave her to rest. But before retiring, it is proper to ascertain that the bandage be felt agreeably tight, that there be no considerable hemorrhage, and that the after pains are not coming on severely.

It is also proper to mark the state of the pulse, and to leave strict directions with the nurse, that every exertion, and all stimulants, be avoided.

Having thus simply stated what appears to be necessary, I must next say what ought to be avoided. It is customary with many nurses, to shift the patient completely, and, for this purpose, to raise her to an erect posture. Now this practice may not always be followed by bad consequences, but it is very reprehensible; for the patient is thus much fatigued, and if she sit up even for a short time, hemorrhage or syncope may be produced. The pretext for this is generally to make the woman comfortable; and indeed, if the clothes be wet with perspiration or discharge, there may be some inducement to shift her. But this ought to be done slowly, without raising her, and if she have been fatigued, not until she have rested for some hours. Another bad practice is, the administration of stimulants, such as brandy, wine, or cordial waters. I do not deny, that these, in certain cases of exhaustion, are salutary; but I certainly maintain, that generally they are both unnecessary and hurtful, tending to prevent sleep, to promote hemorrhage, and excite fever. A third practice, no less injurious, is, keeping the room warm with a fire, drawing the bed curtains close, increasing the bed-clothes, and giving every thing warm to promote perspiration. This is apt to produce debility, and many hysterical affections, as well as a troublesome species of fever, which it is often difficult to remove. It also renders the woman very susceptible of cold, and a shivering fit is very readily excited. Lastly, gossiping and noise of every kind, is hurtful, by preventing rest, occasioning head-ach or palpitation, as well as other bad symptoms.

At our next visit which ought to be within twelve hours after delivery, we should inquire whether the patient have slept, and ascertain that the pulse be not frequent, that the after pains have not been severe, nor the discharge copious. We should also particularly inquire if she have made water; and if she have not, but have a desire to do so without the

power, a cloth dipped in warm water, and wrung pretty hard, should be applied to the pubis. If this fail, the urine will often be voided if the uterus be gently raised a little with the finger, or the catheter may be introduced. There are two states in which we are very solicitous that the urine be voided: the first is, when the woman has much pain in the lower belly, with a desire to void urine; the second is, after severe or instrumental labour.*

A stool should be procured within twenty-four or thirty-six hours after delivery, either by means of a clyster or a gentle laxative. If the patient usually have the milk fever smartly, or the breasts are disposed to be painful and tense, a mild dose of some saline laxative is better than a clyster. But if she be delicate, and have formerly had little milk, a clyster is to be preferred. If she is not to suckle the child, then the laxative should be rather brisker, and may be repeated at the interval of two days.

After delivery, there is a discharge of sanguineous fluid from the uterus for some days, which then becomes greenish, and lastly pale, and decreases in quantity, disappearing altogether within a month, and often in a shorter time. This is called the lochial discharge. During this time, it is necessary that the vagina and external parts be daily washed with tepid milk and water.

During the latter end of gestation, milk is generally secreted in a small quantity in the breasts, and sometimes it even runs from the nipples. After delivery the secretion increases, and about the third day the breasts will be found considerably distended. Many women, indeed, complain at this time of much tension and uneasiness, and there is usually some acceleration of the pulse. A pretty smart fever may even be induced, which is called the milk fever. The best

* If sloughing of the neck of the bladder should take place, and a small opening be formed, a catheter must be kept in the urethra and bladder, and the wound dressed with a pledgit dipped in lime water mixed with tincture of myrrh; then a soft compress is to be cautiously introduced into the vagina, to support the parts. Great attention is to be paid to cleanliness

way to prevent these symptoms from becoming troublesome, is to keep the bowels open, and apply the child to the breast before they have become distended. This may generally be done twelve hours after delivery.

The diet of women in the puerperal state ought to be light; and if they are not to give suck, liquids should be avoided, the food should be of the dry kind, and thirst should be quenched, rather with fruit than with drink. If they are to nurse, the diet, for the first two days, should consist of tea and cold toasted bread for breakfast, beef or chicken soup for dinner, and panado for supper; toast water, or barley water, may be given for drink, but malt liquor should be avoided. Unless the patient be feeble, and at the same time have no fever, wine should not be allowed for the first two days; a little may then be added to the panado or sago, which is taken for supper; and a small glass, diluted with water, may be taken after dinner. A bit of chicken may be given for dinner, and, in proportion as recovery goes on, the usual diet is to be returned to.

The time at which the patient should be allowed to rise a little to have the bed made, must be regulated by her strength, and other circumstances. It ought never to be earlier than the third day, and, in a day or two longer, she may be allowed to be dressed, and sit a little; but even in the best recovery, and during summer, the woman ought not to leave her room within a week. She ought not to go out for an airing, in general, till the third week. In cold weather, and when the patient is delicate, she must be longer confined. By rising too soon, and making exertion, a prolapsus uteri may be occasioned, and still more frequently the lochia are rendered profuse, and the strength impaired.

CHAPTER II.

Of Uterine Hemorrhage.

AFTER the child is expelled, the uterus contracts on the placenta, throws it off, and the fibres coming close together, lessen the diameter of the vessels, so that no great quantity of blood is evacuated. But if this contraction do not take place duly, the vessels are left open, and the blood pours out with such rapidity, that in a few minutes the patient may be destroyed. Now it is proper in every case to watch, lest hemorrhage come on after the child is delivered; and whenever it appears, the uterus must immediately be excited to contract. The hemorrhage would seem, by many, to be attributed to the presence of the placenta, for their first object is instantly to extract it. But our view is, to stimulate the uterus, and therefore, we immediately introduce the hand within it, not to pull away the placenta, for this is dangerous, and would not stop the hemorrhage, but by its presence and gentle motion, to excite the uterus to expel both the hand and the placenta, or at least to contract upon them.(g) This, if necessary, may be farther assisted by the application of a cloth dipped in cold water to the belly, over the uterus. At the same time we must avoid whatever can increase the action of the vessels, such as heat, and exertion. The last should always be avoided, and the first must likewise be improper, unless the body be cold; then we apply it so as to support the system, and preserve the natural warmth, which does not, in these circumstances, increase the hemorrhage.

If the discharge have been profuse, or the pulse and strength much weakened, then we must give, at short intervals, small doses of wine or some other cordial, with a little beef tea, or arrow root jelly. But we must be careful not to

(g) Having my hand in the uterus, I would undoubtedly detach the placenta. The sooner it is removed, in cases of hemorrhage the better. There can be no danger of inverting the uterus if care be observed; and the proper mode of taking away the placenta practised. Eo.

give more than is really necessary to prevent the system from sinking, for, if we excite it too much or too fast, we bring on fever or inflammation. If much fluid of any kind be given, the patient is apt to vomit. This often revives her, and excites the contraction of the uterus. But it is better to avoid vomiting, which is unfavourable when it occurs merely from evacuation; in this case, it indeed gives temporary relief to the sensation, but it indicates great weakness. If it be repeated, solid opium should be given.

Hemorrhage may come on after the placenta is expelled, in consequence of its removal having been rashly hastened, or of improper exertion, or of too much heat, or warm drinks, or debility of the uterus. It is to be checked, by proceeding on the principle of exciting the uterus. Cloths wet with cold water should be applied to the belly and vulva, (*h*) and, at the same time, the uterine region should be pressed pretty firmly with the hand, or rubbed until the womb feel hard through the integuments. If this fail, the hand is to be introduced, to stimulate the uterus. When contraction comes on, large coagula will be expelled. The belly is then to be cautiously bandaged, pretty tightly, and the treatment above mentioned, relating to opiates and cordials, is to be had recourse to. We ought not to be in a hurry to leave the patient. If other means fail, we must stuff the vagina, and afterwards apply a firm bandage round the belly.

Many days after the woman is delivered, hemorrhage may be excited, by a degree of exertion greater than the system can easily bear, which is sometimes very small. The blood may flow constantly, but in trifling quantity; or it may come away profusely, attended with coagula; and in this case it stops by faintishness, but returns after a certain interval. The first species, or *stillicidium*, is to be removed by giving

(*h*) If ice can be procured, it will be found still better. It may be applied directly to the abdomen, and even introduced into the vagina. I know of nothing, however, which so promptly and certainly checks uterine hemorrhages as dashing the coldest water, which can be had, on the abdomen. I have never, indeed, heard of its failing. E.D.

sulphuric acid and tonics, and using the shower bath, if the woman be not very recently delivered. Astringent injections are also of great utility, and must be employed if the disease continue, for it weakens the patient, and injures the secretion of milk. The second species is more dangerous, as the blood flows faster. It may proceed from any cause disordering the action of the uterus, and interfering with the process of its restoration to the unimpregnated state. But very often it is occasioned by the retention of some part of the placenta, and continues till it is expelled. The paroxysm is stopped, if violent, by syncope; and then a coagulum forms in utero, which, at the next attack, is expelled like an abortion. The hemorrhage is to be checked by the immediate use of the plug. The patient is to be kept cool, and in a recumbent posture; the bowels are to be opened, and the strength supported by a mild nourishment, not of the stimulating kind. Acids are of service, especially if this state be conjoined with a species of hectic fever, to be presently noticed. Sometimes the digitalis is of use; but gentle emetics, of sulphate of zinc, are of more benefit, by exciting the contraction of the uterus; and during their operation, we must use the plug, and remain in the house. If we can feel any foreign body in utero, with the finger, we must extract it. Injections into the uterus are also proper.

CHAPTER III

Of Inversion of the Uterus.

INVERSION of the uterus implies, that the inside is turned out, and down into the vagina. It may take place in different degrees. When complete, it protrudes out of the vagina, and exactly resembles the uterus after delivery, only the mouth is turned upward. The vagina is, in this case, also in general inverted, so that the tumour is of considerable length. When it is partial, the tumour is retained within the vagina, and the fundus only protrudes to a certain degree through the os uteri, forming a firm substance, something like a child's head. (1) When the uterus is inverted, the woman feels great pain, generally accompanied with a bearing down effort, by which a partial inversion is sometimes rendered complete. The pain is obstinate and severe, the woman feels very weak, the countenance is pale, the pulse feeble, and often imperceptible, a hemorrhage very generally attends the accident, and often is most profuse. But it is worthy of notice, that complete inversion sometimes is not accompanied with hemorrhage,* whilst a very partial inversion may be attended with a fatal discharge. Fainting, and convulsions, are not unfrequent attendants, although the hemorrhage have been trifling.

Inversion, in a great majority of instances, depends upon

(1) Mr. White of Paisley describes it very well, as resembling a printer's ball. *Med. Com.* vol. XX. p. 147.—Sometimes it does not pass through the os uteri. Denman, II. p. 351.

Mangetus, lib. IV. p. 1019, relates a fatal case, where the tumour was taken for the head of a second child. It was at first partially, and then completely, inverted with excruciating pain.

Mr. Smith relates a case of inversion, where the accident was followed by syncope, subsultus, &c. The subsultus and frequent pulse continued for some days, with smart fever, and inability to move. *Med. and Phys. Jour.* vol. VI. p. 503.—In the same volume, Mr. Primrose gives an instance where a great part of the uterus sloughed off, and the woman recovered.

* This was the case, in the instance related by Dr. Hamilton, *Med. Com.* vol. XVI. p. 315.—In the case by Mr. Brown, the hemorrhage was considerable. *Annals of Med.* vol. II. p. 277

the midwife* endeavouring to extract the placenta, by pulling the cord. Sometimes the uterus is directly pulled down, and the placenta still adheres; in other cases, it is separated. It may also happen, if the child be allowed to be rapidly expelled; for if the cord be short, or entangled about the child, the fundus may receive a sudden jerk, and become inverted.

Inversion may terminate in different ways. It may prove rapidly fatal by hemorrhage; or it may excite fatal syncope, or convulsions; or it may operate more slowly, by inducing inflammation or distension of the bladder; or after severe pains and expulsive efforts, the patient may get the better of the immediate injury, the uterus may diminish to its natural size, by slow degrees, and give little inconvenience; (2) or it may discharge fœtid matter, and give rise to frequent debilitating hemorrhage; or hectic comes on, and the patient sinks in a miserable manner.

If inversion be discovered early, the uterus may be replaced. If it have protruded out of the vagina, it is, first of all, to be returned within it; if it have not, we proceed directly to endeavour to return it within the os uteri, by cautiously grasping the tumour in the hand, and pushing it upwards, within the os uteri. If we push directly without compressing the tumour, we sometimes bring on violent bearing down pains. These are occasionally attended with increase or renewal of flooding. If we succeed, we should carry the hand within the uterus, and keep it there for some time, to excite its contraction. If the placenta still adhere, we should not remove it until we have reduced the uterus; after which, we excite the contraction of the womb, to make

* Chapman relates a case of inversion, where the midwife pulled forcibly at the uterus, and excited convulsions, fainting, and death. Case 29, p. 123

(2) La Motte, 383, mentions a woman who had inversion for above thirty years. Dr. Cleghorn, *Med. Commun.* II. 226, relates a case, where the uterus slowly returned to its natural size. This woman still menstruates, and enjoys tolerable health; it has been of twenty years' standing. The womb is smooth, moist, and gives little pain.—Menstruation also continued in Dr. Hamilton's case, *Com.* XVI. p. 315.

it throw off.* It is sometimes long before the pulse becomes steadily to be felt.† Occasionally, after the reduction, when the patient is seeming to do well, she is seized with a fit, and dies.‡ Or, she may remain long weak, and have swelled feet.§

If inversion have not been discovered early, it is more difficult, nay, sometimes impossible to reduce it, owing chiefly to contraction of the os uteri. Dr. Denman says, that he has found it impossible to reduce it, even four hours after it took place; and in a chronic inversion, he never once succeeded. In such cases, it is not prudent to make very violent efforts, to reduce the uterus, as these may excite convulsions. We must in every instance alleviate urgent symptoms, such as syncope, retention of urine, or inflammation by suitable means. I may further observe, that when a patient, after delivery, complains of obstinate pain, or bearing down, or suppression of urine, or is very weak, we should always examine per vaginam. If the uterus be inverted, we may feel the tumour, and we may find the hard womb to be absent in the belly, or lower down than it should be. If the examination be neglected, the patient may be lost. I have known the first intimation given to the practitioner, to be his finding no uterus in the belly, when it was opened after death. Examination is of the utmost consequence.

When the uterus cannot be replaced, we should at least return it into the vagina. We must palliate symptoms, apply gentle astringent lotions, keep the patient easy and quiet, attend to the state of the bladder, support the strength, allay irritation by anodynes, and the troublesome bearing down by a proper pessary; the bad effects of neglecting or removing this are to be seen in La Motte's 385th case. If inflammation come on, we must prescribe blood-letting, laxatives, &c. In this way, the uterus contracts to its natural size, and the woman menstruates as usual, but generally the health is deli-

* In a case related in *Memoirs of Med. Soc.* vol. V. p. 202, the placenta was allowed to remain five days after reduction, but this is a hazardous practice.—Perfect, case 71, brought it away after four hours.

† Case by Dr. Dulfield, in *Trans. of Coll. at Phil.* 167.

‡ Case by Dr. Albers. *Annals of Med.* vol. V. p. 390.

§ Mr. White's case, *Med. Comment.* vol. XX. p. 247.

cate. Sometimes the uterus becomes scirrhus, or gangrenous sloughs take place.*

If the uterus discharge fœtid matter, and hemorrhage take place, the strength is apt to sink, and the patient dies, hectic. Astringent applications, with attention to cleanliness, good diet, and the occasional use of opiates may give relief, but if they do not, we are warranted to prefer extirpation of the uterus, to certain death. This operation has been repeatedly successful, (3) and is performed by applying a

* Schmucker's Surgical Essays, art. xvii.—A case is given in *Med. Jour.* VI. 367, where appearance of gangrene, from strangulation, took place. The womb was scarified, and the swelling quickly disappeared. The patient recovered.

(3) The inverted uterus has been torn off with the crotchet, being mistaken for the child's head. *Jour. de Med.* tom. XLI. p. 40.—A case of successful extirpation is inserted in the same work for August, 1786.—Wrisberg relates a case, where it was cut off by the midwife, who had inverted it.—A successful case is given by Dr. Clarke, in *Edin. Med. and Surg. Jour.* vol. II. p. 419.—Another case is mentioned in the *Recueil des Actes de la Société de Lyon*.—Mr. Hunter of Dumbarton gives a successful case, in *Annals of Med.* vol. IV, p. 366.—I have particularly examined this woman, several years after the operation. She was delivered without any violence, after having been twenty-four hours in labour. In about an hour the placenta came away. She had considerable flooding and great weakness. She could not void her urine, which in two days was drawn off with the catheter, and this was frequently repeated. A fortnight after delivery, the womb came down, with pains. It was replaced, but again came down. A fœtid discharge took place, and the woman was reduced to a state of great weakness. A ligature was applied, which, she says, gave her a good deal of pain, and the tumour was cut off. Her account differs in some respects from Mr. Hunter's, probably owing to her speaking from memory alone, some years after the event; and she does not notice the previous extraction of any lumps from the uterus, which Mr. Hunter mentions, for most likely she did not know of that. About two years ago, she had for a length of time a discharge of thick white matter. At present, the vagina is of the usual length; and at the top, a transverse aperture is felt, the posterior lip or edge of which is longer, and more tendinous to the feel, than the anterior. It admits the tip of the finger, and feels softer than the os uteri, in a natural state. There is no cervix uteri. The mammæ are firm, and of good size, and she has not lost the sexual desire. She is subject to dyspepsia. From the preparation in the possession of Dr. Jeffray, there can be little doubt that part of the uterus was extirpated.

Bartholin relates a case, where the inverted womb was torn away, and

ligature high up, and cutting off the tumour below. But it must also be remembered, that in some cases where the inverted uterus has been either intentionally extirpated, or mistaken for a polypus,* death has followed.

Inversion, when long continued, may be confounded with prolapsus, or polypus: from the first, it is distinguished by the shape and by the absence of the os uteri; from the second, by examination, and finding the os uteri embracing the polypus.† The history will likewise assist in the diagnosis.

CHAPTER IV.

Of After-Pains.

FEW woman proceed through the early part of the puerperal state, without feeling attacks of pain in the belly, which are called after-pains.‡ These are generally least severe after a first labour. They proceed from the contraction of the uterus in an irregular manner, excited by the

found under the bed of the dead patient.—Blasius, a case where the uterus was hard and scirrhus; it was tied, but on the third day the patient died. In the cavity of the portion were found the ovaria and ligaments.—Goulard's patient died on the 18th day. Mem. of Acad. de Sciences, 1732.

* In a case related in *Recueil des Actes de la Société de Santé de Lyon*, the uterus was taken for a polypus, and the ligature applied. The mistake being discovered, it was instantly withdrawn, but the woman died in a few days.

† In one case, the os uteri adhered to the neck of the polypus, and gave rise to appearance of inverted uterus. Mem. of Med. Soc. vol. V. p. 14.

‡ It is necessary to attend carefully to the duration and situation of pain after delivery, and to the symptoms connected with it. For it may proceed from inflammation of the viscera; or in some cases it is felt near the groin, and may be the forerunner of swelled leg; or about the hip, ending in a kind of rheumatic lameness; or in consequence of the application of cold, pain may be felt in some part of the recti or oblique muscles, which, if not removed by fomentations and frictions, may end in abscess, which frequently is long of bursting, and excites hectic fever. It ought to be opened with a lancet or caustic.

presence of coagula, or other causes, and each severe pain is generally followed by the expulsion of a clot. They come on usually very soon after delivery, and last for a day or two. They are often increased, when the woman first applies the child to the breast. They are distinguished from inflammation of the uterus or peritoneum, by remitting or going off. The belly is not painful to the touch, the uterine discharge is not obstructed, the patient has no shivering nor vomiting, the milk is secreted, and the pulse is seldom frequent: When the pulse is frequent, then we must always be on our guard; for if this be the case before the accession of the milk fever, the patient is not out of danger, and if any other bad symptom appear, we must be prompt in our practice. After-pains may also be caused by flatulence and costiveness, which we know by the usual symptoms; but a combination of this state with uterine after-pains is often attended with a frequency of the pulse, and may give rise to a fear that inflammation is about to come on, but other symptoms are absent. Uterine after-pains are relieved by opiates (*i*) and fomentations. When the bowels are also affected, a laxative is useful, and this is always proper when the pulse is frequent. A severe constant pain in the hypogastric region, is sometimes produced by an affection of the heart, and proves fatal, yet the uterus is found healthy.

(*i*) In order to relieve the pains the opiate should be large. I generally direct fifty drops of laudanum to be given, which may be repeated if the pains continue troublesome. Where the laudanum fails, I have often used with success either a strong infusion, or the tincture of the common hop. The dose of the former is about a tea-cup full, and of the latter two drachms. In those cases of extreme anxiety, vigilance, and restlessness, which are apt to succeed to delivery, I have found the same medicine very advantageous. E. N.

CHAPTER V.

Of Suppression of the Lochia.

THE lochia* may be suppressed, in consequence of inflammation of the uterus, or puerperal fevers. But in some cases, this takes place, as an idiopathic disease. When the secretion is merely diminished, the patient often suffers no inconvenience; but when it entirely stops, great pain is felt in the lower belly, which is somewhat tumid, and tender to the touch. There is considerable sickness, and other derangement of the abdominal viscera, and the pulse is very frequent. This bears a strong resemblance to peritoneal inflammation, but comes on more rapidly; the pain is early very severe, and the pulse soon rises above 130 in the minute. A clyster ought to be immediately administered, and afterwards diaphoretics with opiates, and the belly should be fomented. If the symptoms continue, laxatives should be used.

 CHAPTER VI.
Of Retention of Part of the Placenta.

IF either the whole, or a considerable portion of the placenta, be left in utero for some time, the patient is exposed to great danger. Hemorrhage is not the only risk, for in many cases, severe headach, hysterical affections, sickness, nausea, prostration of strength, and fever have taken place, and continued until the placenta have been expelled, after

* Simple suppression of the lochia is not attended with the general swelling which occurs in peritonitis, nor is the belly so universally tender to the touch. There is not so much heat and throbbing pain in the hypogastrium, as in hysteritis, nor is the strangury so great. Attend to the history delivered of these diseases.

which the patient has begun to recover. On the other hand, it has, though more rarely, occurred, that the placenta, having been retained for a length of time, has been expelled, before these symptoms have become urgent; but they have afterwards gradually increased, and carried off the patient.* Sometimes the symptoms run so high, or the portions of the placenta are so obstinately retained, that the patient sinks under the disease, as in ordinary cases of hectic, with frequent small pulse, burning heat of the hands and feet, profuse perspiration, and universal emaciation; or dies with symptoms similar to those of putrid fever; or is carried off suddenly by a convulsion or an attack of hemorrhage.

These symptoms have a very indefinite duration, for sometimes the patient dies in a very few days; in other instances they are protracted for two or three weeks.† Sometimes no hemorrhage takes place during the whole course of the disease; but occasionally, repeated hemorrhages do occur, adding greatly to the debility of the patient. In several cases, inflammation has come on, and spread to the intestines. In some of these, the placenta has been afterwards expelled, in others extracted; but very few have recovered. On inspecting the uterus, it has either been found black, as if it had been gangrenous, or in a state of high inflammation, or of suppuration, whilst the parts in the vicinity were in various stages and degrees of inflammation.

Now, when these symptoms have taken place, our object ought to be to remove the cause, and support the patient under the disease. I am aware, that some have attributed these symptoms not to the placenta, but to concomitant cir-

* In a case related by Mr Whyte, the secundines, after a clyster, came away in a putrid state on the fifth day. On the sixth, the patient was much oppressed, had fetid breath, &c; on the twelfth, an eruption appeared, and she died on the twenty-second.

† Dr. Perfect relates a case, in which the secundines were retained till the eighth day, when the patient died. Her stomach rejected all food and medicine, she had weak quick pulse, hiccup, and *subsultus tendinum*. Vol. II. p. 390.—In another case, the placenta was retained till the thirteenth day, and the woman died on the twentieth, p. 381.

circumstances, such as injury done with the hand in endeavouring to take it away. But we find that they take place when the whole of the placenta has been left, without any attempt having been made to remove it. They are produced when any substance is left to corrupt in utero.* They continue as long as it remains, and they usually cease when it is expelled.

It may be proper to examine, with the finger introduced into the os uteri, whether any portion of the placenta can be felt and removed; but generally this cannot be freely done, for the uterus itself, as well as its mouth, is hard and contracted, and no violent or painful attempt with the hand or finger ought to be made. But when we can easily feel and act upon a portion, we ought slowly and gently to endeavour to bring it out; and if the whole of the placenta have been left, such attempts are still more necessary, and likely to succeed. The os uteri often affords considerable resistance to the introduction of the hand, in cases where the retention has subsisted for some days; but by very slow and gentle efforts, such as are scarcely felt by the patient, it may be dilated, and sometimes it yields very easily, or is not at all contracted. If, however, it be rigid and unyielding, we must not use violence; but this condition is rarely conjoined with retention of the entire placenta.

When a portion of the placenta is retained, we may derive advantage, from injecting frequently, warm water, or warm infusion of chamomile flowers, or water with a very little muriatic acid added to it. These injections may be made, by fixing a female catheter to an elastic-gum bottle; or a syringe with a long pipe may be employed.

Sometimes natural or artificial vomiting assists the expulsion.

The patient should be allowed the free use of fruit and vegetable acids, and light mild diet should be given in small quantity at a time. The bowels ought to be kept open, and opiates should occasionally be given to allay irritation. Vo-

* Similar symptoms have been produced by the head of the child being left in utero. *Perfect*, vol. II. p. 80.

miting and nausea may be checked or mitigated when urgent, by effervescing draughts. Bark, in small doses, has been given, but I cannot place much confidence in it. When there is a fulness about the abdomen, and tendency to inflammation, purgatives are of service. When the nervous system is much disturbed, the camphorated mixture may be given in its usual dose. (k)

CHAPTER VII.

Of Strangury.

AFTER severe labour, the neck of the bladder and urethra are sometimes extremely sensible; and the whole of the vulva is tender, and of a deep red colour. This is productive of very distressing strangury, which is occasionally accompanied with a considerable degree of fever. It is long of being removed, but yields at last to a course of gentle laxatives, opiates, and fomentations. Anodyne clysters are of service.

(k) The placenta was formerly extracted immediately after delivery. The celebrated Ruysh was the first to point out the pernicious consequences of this practice, and to bring it into disrepute. Dr. William Hunter, however, went to the other extreme. Believing that the natural powers were adequate, in every instance, to the expulsion, he discountenanced all interference. But by experience he was convinced of his error, and had the candour to acknowledge it. Mr. Turnbull, a respectable surgeon of London, has lately revived this dangerous notion, and has supported it by the publication of a number of cases where the placenta was left without injury. Notwithstanding, however, there is no point better settled in the practice of midwifery than the danger of leaving the placenta behind. It is a good general rule to wait about an hour for the uterine efforts to expel it; but if these, at the expiration of this time, prove insufficient, then to take it away. ED.

CHAPTER VIII.

Of Spasmodic and Nervous Diseases.

PALPITATION is not an uncommon disease after delivery. It usually attacks the patient suddenly, and often after a slight alarm. She feels a violent beating in the breast, and sometimes has a sense of suffocation; she has also a knocking within the head, with giddiness, and a feeling of heat in the face. The pulse is extremely rapid during the fit, and the patient is impressed with a belief that she is going to die. After the paroxysm, the mind is left timid, and the body languid. Sometimes it is succeeded by a profuse perspiration; and should the fits be frequently repeated, the temperature is variable during the intervals, and the stomach is filled with gas. This is often a very obstinate, but it is not a dangerous disease, unless it proceed from uterine disease, marked by pain and swelling of the belly. It is to be relieved by giving, during the paroxysm, a liberal dose of ether and laudanum; and during the intervals, antispasmodics, laxatives and tonics are to be employed. As soon as possible, the patient should remove to the country.

Colic, cramp of the stomach, hysteric fits, hiccup, syncope, and dyspnœa, are to be treated upon general principles. They are most readily removed by full doses of opium, and other antispasmodics, and clearing out the bowels with purgatives.*

There is a species of dyspnœa, that depends upon exertion of the muscles of respiration during labour, or distension of the abdominal muscles. When the abdominal muscles are affected, the person often feels the difficulty of breathing, chiefly during expiration. It is relieved, by tightening a little the compress round the belly, and giving thirty drops of laudanum. When the diaphragm is affected, the unea-

* When a patient is known to be subject to syncope or spasmodic diseases after delivery, a dose of spt. ammon. arom. combined with tincture of opium, should be ready for her after the child is expelled, and the abdomen ought to be duly supported.

siness is usually greatest during inspiration; and there is often a pain in the side, or in the back, or about the pit of the stomach, which may be very severe. It is attended, sometimes, with a sense of stuffing in the breast; in other cases, with an acute feeling of suffocation, and the pulse is extremely rapid. A large dose of laudanum, with ether, removes the spasm; if not, a sinapism must be applied. These affections come on within a few hours after delivery. The spasm of the diaphragm is to be distinguished from pleurisy, by its coming on suddenly, and being very acute; whereas, inflammation comes on more slowly, and is often preceded by a shivering fit, there is more cough, and the pulse at first is not so frequent, but is sharp. Pleurisy requires the prompt use of the lancet, blisters, and digitalis.

Dyspnœa is also occasionally produced by the roller being too tight.

Another affection, which I am disposed to consider as more akin to hysteria than to any other disease, is the ephemera, or weed, as it is called by nurses. This generally makes its attack within a week after delivery. It is sometimes directly ushered in with a fit of palpitation, or is excited by a frightful dream, from which the patient awakes in a shivering fit; or the chill comes on, accompanied with pain in the back, after some slight alarm, or injudicious exposure to cold. When the cold stage has continued for some time, the hot one commences, and this ends in a profuse perspiration, which either carries off the fever completely, or procures a great remission of the symptoms. The head is usually pained in the two first stages. The pulse is extremely rapid, until the third stage has continued for some time; it is also subject to very great irregularities, and is very changeable in its degree of frequency. The thirst is considerable, the stomach generally filled with flatus, and the belly bound. The mind is weakened, and the patient is much afraid of dying. In some instances, the patient is slightly delirious; in others, she has shifting pains in the

abdomen. If the paroxysm be repeated, the secretion of milk is diminished.*

The paroxysm continues for some hours, and then may completely go off, not to return again. But in other cases, it recurs frequently, being always preceded by a cold fit, and often with a pain in the back; and sometimes the fit begins regularly one or two hours sooner every succeeding day. It is more favourable when the fit postpones. When this disease is not combined with any local injury, it is less dangerous than most fevers occurring in child-bed; but if it recur very frequently, and be attended with much debility, the danger increases in proportion to the continuance of the disease. Local derangement is apt to take place very suddenly in the course of this ailment; the breasts are peculiarly liable to become inflamed. A fatal termination is usually preceded by a coma, or vomiting of dark coloured matter.

Delicate women, and those who have suffered much in parturition, are chiefly affected with this disease, but all are more or less liable to it.

In the cold stage, we give small quantities of warm fluid, and apply a bladder filled with warm water to the stomach, or a warm flannel to the back, on the commencement of the chilliness. Having hastened on the hot stage, we lessen very cautiously the number of the bed-clothes, and give saline julap with diluents, to bring on the sweating stage. When this is done, we are careful not to encourage perspiration too much, which increases the weakness, or brings out a miliary eruption, and renders the disease more obstinate. We refrain from warm drink. In the whole paroxysm, we must watch against the sudden application of cold, which, in the two last stages, renews the shivering. When the fits recur, we may sometimes check them, by giving an opiate an hour before the expected time of accession, and applying

* When this fever is early attended with bilious vomiting, or derangement of the functions of the abdominal viscera, we must always be upon our guard, lest some inflammatory or local disease insidiously exist or take place.

warmth to the back and stomach the moment the chilliness is felt. It is of great consequence to keep the bowels open, by aloes, combined with hyocyamus, calomel, &c. Tonic medicines, such as bark, sulphuric acid, and chalybeates, are useful; and in some cases, valerian may be joined to these with advantage. During the whole time, the strength must be supported by suitable diet; and as soon as possible, the patient should be carried to the country. If the fits return often, it is generally necessary to give up nursing.

CHAPTER IX.

Of the Milk Fever.

THE secretion of the milk is usually ushered in with a slight degree of fever, or, at least, a frequency of the pulse. But sometimes it is attended with a smart febrile fit, preceded with shivering, and going off with a perspiration. This attack, if properly managed, seldom continues for twenty-four hours; and during this time, the breasts are full, hard, and painful, which distinguishes this from more dangerous fevers. Sometimes, during the hot fit, there is a slight delirium. A smart purge generally cures this disease, and is often used, in plethoric habits, on the third day after delivery, to prevent it. Mild diaphoretics, during the hot stage, are also proper. Applying the child early to the breast is a mean of prevention.

CHAPTER X.

Of Miliary Fever.

THE miliary fever begins with chilliness, sickness, languor, sometimes amounting to syncope, and frequency of pulse, with heat of the skin. There is also a sense of pricking or itching on the surface; and sometimes the extremities are numbed. The febrile symptoms usually continue for some time, before the eruption appears, often for four or six days. Previous to the eruption, the patient feels very much oppressed, and has a great weight about the chest; the spirits are low, and a sour smelled perspiration takes place in a profuse degree. The eyes are occasionally dull and watery, or inflamed, and the patient has ringing in the ears. The tongue is foul, and its edge red as in scarlatina. Aphthæ sometimes appear in the throat. The lochial discharge is diminished or suppressed. Before the eruption is seen, the skin feels rough like the cutis anserina. Presently a number of small red pustules appear like millet seeds, which are felt with the finger to be prominent. In a few hours, a small vesicle forms on the top, containing a fluid, first straw coloured, and then white or yellow. In two or three days a small scab forms, which falls off like scales. The pustules are generally distinct, but sometimes they form clusters. They appear first about the neck and breast, and then spread to the trunk and extremities, but very rarely affect the face. Different crops of pustules may come out in the same fever. Burserius and others, divide the pustules into several varieties; but most writers are satisfied with two, taken from the general appearance, the red and the white, and the first is attended with a milder disease than the second.

This disease is peculiarly apt to attack those who are weakened by fatigue, evacuations, or other causes; and hence we can easily explain, why women in child-bed should be subject to it.

Some have considered the eruption as altogether dependent on the perspiration. Others consider it, as in many cases idiopathic, and both, perhaps, at times are right. We can only consider the disease as idiopathic, when the eruption mitigates the symptoms, when the fever goes off as the pustules arrive at maturity, and there is no other puerperal disease present, acting as an exciting cause. It does not appear to be contagious, unless connected with a fever which is so of itself, such as typhus.

Miliary eruption also occurs during child-bed, as a symptom, connected with puerperal diseases. It often accompanies the milk fever, or the weed, when the perspiration is injudiciously encouraged; and this is by far the most frequent form, under which the *febris miliaris* appears. It never alleviates the symptoms. It may also accompany fevers connected with a morbid state of the peritoneum or brain, which generally prove fatal; death being preceded by vomiting of dark coloured fluid. Women, much reduced, have also partial miliary eruptions, generally of the white kind, without fever. This requires no particular treatment.

Whether the miliary fever be idiopathic, or symptomatic, the treatment is the same. We endeavour, at first, to check or remove the fever, by means which I have pointed out in a former chapter.

When profuse perspiration, with or without eruption, takes place, we must cautiously abate it, by prudently lessening the quantity of bed-clothes, or making the bed-room cooler. The rest of the treatment consists chiefly in removing irritation from the intestines by the use of laxatives, and supporting the strength by light nourishing diet, whilst we use tonics, such as sulphuric acid or bark. These tend also to abate the perspiration, which is scarcely ever to be encouraged. The linen should be frequently changed. When the eruption suddenly recedes, we have been advised to renew the perspiration, apply blisters, and give musk and cordials, especially when convulsions are threatened. This dangerous retrocession, however, I have not met with, and apprehend that it very rarely occurs.

CHAPTER XI.

Of Inflammation of the Uterus.

THE uterus may become inflamed, in consequence of rude management, or other causes. The disease usually begins about the second or third day after delivery, but it may take place at a later period. It is pointed out by a pain in the lower part of the belly, which gradually increases in violence, and continues without intermission, though it is subject to occasional aggravations. The uterine region is very painful when it is pressed, and it is a little swelled. There is no tension nor general swelling of the abdomen, however, unless the peritoneum have become affected. But the parietes are rather slack, and we can feel distinctly the uterus through them, to be hard and enlarged, and it is very sensible. There is also pain felt in the back, which shoots to the groins; and there is usually a difficulty in voiding the urine, or a complete suppression, or a distressing degree of strangury. The internal parts also become frequently of a deep red colour, and the vagina and uterus have their temperature increased. The lochial discharge is very early suppressed, and the secretion of milk diminished or destroyed. Nearly about the same time that the local symptoms appear, the system becomes affected. The patient shivers, has head-ach, is often sick, and vomits bilious or dark-coloured fluid. The pulse very early becomes frequent, and somewhat hard, and the skin is felt to be hot. The vomiting in some cases continues, and the bowels are at first bound, but afterwards the stools are passed more frequently.

If the inflammation do not extend along the peritoneum, this disease is more easily cured, than other visceral inflammations in the puerperal state. It may terminate favourably by a free perspiration, a diarrhœa, or a uterine hemorrhage; which last is the most frequent and complete crisis. If the pains abate, the pulse come down, and the lochia and

secretion of milk return, we consider the patient as having the prospect of a speedy cure. But in many other cases, the disease is more obstinate, the fever continues, the pain does not abate, and in some days shivering takes place, and the pain becomes of the throbbing kind. The face has often a hectic flush; the urine which was formerly high coloured, now deposits a pink-coloured sediment, in great abundance; the pulse continues very frequent. The nights are spent without sleep, and the patient is wet with perspiration. After some time, matter is discharged from the vagina, or by the bladder or rectum, but oftenest from the rectum. The hectic symptoms continue for many weeks, and may at last prove fatal. Sometimes the disease early proves fatal, the pulse increasing in frequency, the tongue becoming very red, and the strength sinking; but even in this case, it will generally be found, that suppuration has taken place.* Pus is contained often in the ovaria and tubes, and sinuses of the uterus. Mortification is an extremely rare termination. No serous effusion takes place into the abdomen.

This disease calls for the early use of the lancet, which is the principal remedy; and the quantity of blood which we take away, and the repetition of the evacuation, must depend on the constitution of the patient, the effects produced, and the period of the disease. Laxatives are also highly proper. Fomentations and sinapisms are useful. Mild diaphoretics ought to be administered, and tepid water should be injected into the rectum and uterus. In the suppurative stage, we must keep the bowels open, give light nourishment, apply fomentations, and allay pain with anodynes. When the matter is discharged, a removal to the country will be useful, and tonic medicines should be given.

Sometimes the round ligament suffers chiefly, and the patient complains of pain and tenderness at the groin, increased by pressure. The lower part of the belly is, after

* If we do not see the patient till some days have elapsed, and find the pulse full, and the pain very throbbing, the lancet ought not to be used, as suppuration is then going on. The strength is to be supported.

a little, swelled and uneasy. Fever attends this disease, and sometimes the stomach becomes irritable. It is often caused by hasty extraction of the placenta. It requires the early use of laxatives; and if the symptoms are violent, it is proper to take blood from the arm, and apply leeches to the groin, which should seldom be omitted. Afterwards we employ fomentations and blisters. If neglected, the disease may end in suppuration, or in a painful swelling, at the ring of the oblique muscle, which lasts a long time. This is sometimes removed by issues. Anodynes should be given, to allay irritation, and the strength must be supported under the fever, which resembles hectic.

CHAPTER XII.

Of Peritoneal Inflammation.

THE peritoneal lining of the abdomen, or the covering of the intestines, may be inflamed alone; or this disease may be combined with inflammation of the uterus.

Peritoneal inflammation may be caused by violence during delivery, or the application of cold, or the injudicious use of stimulants. It may not come on for three weeks after delivery, but it usually commences earlier than inflammation of the womb; and it may often be observed, that the pulse continues frequent from the time of delivery. It is preceded or attended with a shivering and sickness, or vomiting, and is marked by pain in the belly, which sometimes is very universal; though, in other cases, it is at first confined to one spot. The abdomen very soon becomes swelled and tense, and the tension rapidly increases. The pulse is frequent, small, and sharp, the skin hot, the tongue white and dry, the patient thirsty; she vomits frequently, and the milk and lochia are obstructed. Very soon, the belly becomes as large as before delivery, and is often so tender, that the weight of the

bed-clothes can scarcely be endured; the patient also feels much pain when she turns. The respiration becomes difficult, and sometimes a cough comes on, which aggravates the distress. The bowels are either costive, or the patient purges bilious or dark coloured fæces. These symptoms are more or less acute, according to the extent to which the peritoneum is affected. They are, at first, milder, and are more protracted in those cases where the inflammation begins in the uterus; and in such the pain is often not very great, nor very extensive, for some time. If the disease is to prove fatal, the swelling and tension of the belly increase, so that the abdomen becomes round and prominent, the vomiting continues, the pulse becomes very frequent and irregular, the fauces are aphthous, the extremities cold, and the pain usually ceases rather suddenly. The patient has unrefreshing slumber, and sometimes has delirium mite. The disease may be protracted for eight or ten days, or even longer. If the patient is to recover, the swelling does not proceed to a great degree; the pain gradually abates, the vomiting ceases, the pulse becomes fuller and slower, the breathing easier, so that the patient can lie better down in bed, and she can turn more easily. Sometimes this disease ends in suppuration, and the abscess points and bursts externally. Dr. Gordon, in his treatise on puerperal fever, relates three cases of this kind. In one of these, the matter was discharged from the umbilicus, a month after the attack; in another, six weeks after delivery; and in the third, after two months it came from the urethra.

Upon dissection, the peritoneum is found in a state of high inflammation, but it is rare to find it mortified. A considerable effusion of serous fluid, mixed with curdy substance, is found in the belly.

The patient is only to be saved by vigorous means, and great attention. If the pulse continue above a hundred in the minute, for twenty-four hours after delivery, there is reason to apprehend that some serious mischief is about to happen; and therefore, unless the frequency depend decidedly on debility, produced by great hemorrhage, &c. we ought to

open the bowels freely, and give a diaphoretic. We must carefully examine the belly, and if it be full, or painful on pressure, or if the patient be inclined to vomit, we ought to open a vein, and use purgatives. I know that many are unwilling to bleed women in the puerperal state, and the condition of the pulse may seem to young practitioners to forbid it. But in cases of peritoneal inflammation, not connected with typhoid fever, I must strongly urge the necessity of blood-letting, at a very early period; and the evacuation is to be repeated or not, according to its effects, and the constitution of the patient. (*1*) If she have borne it ill, and is not relieved, when it is used first, I apprehend that the case has not been simple peritoneal inflammation, but is puerperal fever. If she bear it well, and the pulse become slower and fuller, and the pain abate, we are encouraged to repeat it. Leeches, or the scarificator may also be applied to the most painful part. The bowels are to be opened freely with calomel, or some other purgative; and in an advanced stage of the disease, after effusion has taken place, we must employ purges alone, rather than blood-letting. Sinapisms and blisters are also proper. Digitalis has been given, either to abate inflammation, or promote absorption, after effusion has taken place; but I have not found it useful. After effusion has taken place, and debility is produced, cordials, of which wine is the best, should be given, and anodyne clysters are to be administered.

Chronic, or slow inflammation of the peritoneum, is not very unfrequent, and may last for some weeks. It is attended with constant pain in some part of the abdomen, but it is not unbearable; the belly is tender, the pulse frequent, the thirst urgent, and often the mind is affected as in hysteria; or a train of hysterical symptoms supervenes, which may lead off the attention from the seat of the disease. It requires at first blood-letting, and then the frequent use of laxatives, with repeated blisters.

(*1*) This is correct practice. Bleeding may be as safely employed in inflammation connected with the puerperal state, as under any other circumstances. *ED.*

CHAPTER XIII.

Of Puerperal Fever.

PUERPERAL fever begins with shivering, which is in some cases very slight, in others severe. It ushers in the proper symptoms of the disease. It is accompanied, and very often preceded, by frequency of the pulse. After a little time, the abdomen can be discovered to be fuller than it ought to be, and a diffused pain is felt in the belly. This, at first, is slight, and often the patient complains of more pain in the head, especially just above the nose, than in the abdomen; but there is seldom delirium, at least until the end of the disease. The pain of the belly, however, often increases, especially at the navel; and in some cases, the weight of the bed-clothes cannot be borne. The abdomen very speedily becomes swelled. The eye is vacant, and without animation; the lips are pale, the countenance is anxious and ghastly, but sometimes there is a flush on the cheek. There is great dejection of mind, languor with general debility of the muscular fibres, and the patient lies chiefly on her back; or there is so much listlessness, that she sometimes makes little complaint. The skin is not very hot, but is rather clammy and relaxed. The tongue is pale or white at first, but presently becomes brown, and often aphthæ appear in the throat, or mucus is secreted, which excites a cough. The pulse, even at first, is very frequent, and is, at that period, fuller than in simple peritoneal inflammation, but it soon becomes feeble. The thirst is not always great, at least the patient is often careless about drink. Vomiting of a dark coloured matter is very frequent. The bowels are at first bound; but in the progress of the disease, especially about the third day, they usually become very loose, and the stools are dark, fœtid, and often frothy. The urine is passed frequently, and with pain. The lochial discharge is diminished, and has a bad smell, or is changed in appearance; and it is observable, that the ap-

pearance of the lochia, if they had been suppressed, is not critical. The secretion of milk stops, and the patient inquires very seldom about the child. In some cases, I have met with pleuritic symptoms. As the disease advances, the pulse becomes more frequent and weaker, or tremulous. In bad cases, the swelling of the belly increases rapidly, but the pain does not always keep pace with the swelling, being, in some cases, least when the swelling is greatest. The breathing becomes laborious, in proportion as the belly enlarges. The strength sinks, the throat and mouth become foul, low delirium sometimes takes place, and the patient usually dies on the second, or from that to the fifth day of the disease, but in some cases not until the ninth. This fever attacks generally on the second or third day after delivery, but it has occurred even after a week. The earlier it attacks, the greater is the danger, and few women recover who have the belly much swelled.

On dissection, there is found, in the abdomen, a considerable quantity of fluid, similar to that met with in peritonitis. The omentum and peritoneum are inflamed, but perhaps very slightly, and gangrene is unusual. The uterus is not more affected than the intestines. In some cases, the thoracic viscera are affected in a similar way.

It is most frequent, and most fatal, in hospitals. In private practice it is less malignant, though still very dangerous. It is sometimes epidemic, but I do not know that it has ever appeared, as a prevailing epidemic in this city, nor have I been able to trace the contagion from one woman to another. In hospitals, as well as in the private practice of individuals in other places, it has appeared as a contagious disease. There has been much dispute whether the contagion was one *sui generis*, or that of typhus or erysipelas, or hospital gangrene; or if the disease depended on some noxious state of the atmosphere, conjoined with the absorption of putrid matter. The disease appears to depend on inflammation of the peritoneum, conjoined with the operation of some debilitating poison, probably, in most cases, more or less contagious.

It is important to distinguish this disease from simple peritonitis, which may generally be done by attention. In puerperal fever, the abdominal pain is not the most prominent symptom. There is more despondency, debility, and headach; less heat of the skin, less thirst, and less flushing of the face. In the peritoneal inflammation, the pain in the belly usually increases rapidly after it begins, and the swelling increases along with it. Pressure gives very great pain. The fever is inflammatory. Inflammation of the uterus has its proper symptoms.

This disease is dangerous, in proportion to the malignancy of the cause, and the situation of the patient. All writers agree, that in hospitals it is peculiarly fatal, and that few recover from it. In private practice, the disease is milder, but still it is most formidable. With regard to the best mode of treatment, there has been a great difference of opinion, which partly depends on giving the name of puerperal fever to different disorders. (1) I am sorry that I find it much easier

(1) Dr. Denman, vol. II. p. 493, considers puerperal fever as contagious. He strongly advises early bleeding, giving an emetic or antimonial, so as to vomit, purge, or cause perspiration; and if this does good, he repeats the dose, and uses clysters, fomentations, leeches, and blisters. He gives an opiate at night, and a laxative in the morning; or, if there be great diarrhœa, he employs emollient clysters. The strength is to be supported by *spt. ether. nit.* or other cordials.

Dr. Leake, vol. II. trusts much to blood-letting; if the patient be sick, he gives a gentle vomit; if not, laxatives, and then antimonials; applies blisters, and in the end restrains purging with opiates, and prescribes bark.

Dr. Gordon, p. 77, *et seqr.* depends on early and copious blood-letting, taking at first from 20 to 24 ounces, and purges with calomel and jalap. He is regulated rather by the period of the disease than the state of the pulse, bleeding, though it be feeble.

Dr. Butter purges and bleeds, only when there is well marked inflammation, and is satisfied often with taking only three ounces of blood at a time, when there is an exacerbation.

Dr. Manning very rarely bleeds, but trusts to emetics and purges, and employs Dr. Denman's antimonial, which is two grains of tartar emetic, nitted with \mathfrak{H} ii of crab's eyes, and the dose is from three to ten grains.

Dr. Walsh forbids venesection, and advises emetics, followed by opiates and cordials.

Dr. Hulme trusts to clysters, purges, and diaphoretics, and does not

to say, what remedies have failed, than what have done good. I have stated, that in peritoneal inflammation, blood-letting and laxatives are the principal remedies; but in this disease,

bleed unless there be pain in the hypogastrium, accompanied with violent stitches, and a resisting pulse. Even then he bleeds sparingly.

M. Doulect advises repeated emetics, followed by oily potions, and bark combined with camphor.

Mr. Whyte is against blood-letting. He gives at first a gentle emetic, followed by a laxative and diaphoretics. Then he gives bark, with vitriolic acid, and supports the strength.

Dr. Joseph Clarke trusts chiefly to saline purges and fomentations.

Dr. John Clarke, in his excellent Essays, forbids venesection, and advises bark as freely as the stomach will bear it. Opium is also to be given together with a moderate quantity of wine, along with sago. If there be much purging, the bark is to be omitted, till some rhubarb be given, or a vomit, if there be little pain in the belly.

Dr. Kirkland bleeds only if the patient have had little uterine discharge, and the pulse indicate it. He employs laxatives, and in the end bark and camphor.

Dr. Hull considers this disease as simple peritoneal inflammation, which may affect three classes, the robust, the feeble, and those who are in an intermediate state. In the first he bleeds and purges, in the second he begins with emetics and ends with bark, and in the third he bleeds with great caution.

Dr. Hamilton advises puerperal to be treated as putrid fever.

Guinot, Allan, and others, recommend carbonate of potash, in doses of ten or fifteen grains.

M. Vigarous joins with those who consider this as not a fever *sui generis*, but one varying according to circumstances. It frequently begins he says before delivery, but becomes formed about the third day after it. He has five different species. 1st. The gastrobilious, proceeding from accumulation of bile during pregnancy. The essential symptom of this species is intense pain in the hypogastrium. He advises first ipecacuanha, which he trusts to chiefly, and then clysters, laxatives, and saline julap. 2d. The putrid bilious. This is occasioned by bleeding, or neglecting evacuants in the former species; or even without improper treatment, the fever may from the first be so violent, that bilious matter is absorbed. It is marked by great debility, small or intermitting pulse, tumour of the hypogastrium, with sharp pain and putrid symptoms, aphthæ, vomiting, fœtid stools, &c. He advises vomits, laxatives, and bark in great doses, with mineral acids, and clysters containing camphor. 3d. The pituitous fever, attended with vomiting of pituita. The surface is pale, the pulse has not the force or frequency it has in the former species, the heat in general not increased, anxiety, weight, and vertigo, rather than pain of head, often miliary spots, and the usual symptom of pain in the belly, and subsidence of the breasts

blood-letting seldom does good, and often is hurtful. I am convinced that, if it is to be used at all, it must be very early, and that it ought not to be pushed far. If the symptoms of depression of strength, and the characters of puerperal fever, be very decided, we must not bleed; but if the debility be less obvious, if the pain and inflammatory symptoms be considerable, and the case has a mixed appearance approaching to peritonitis, and we are called early, a vein may be opened; but if the pulse speedily become small, or the patient feel faintish, we must not continue the evacuation, and are upon no account to repeat it merely because the blood is buffy. Whether we bleed or not, it will be proper to begin the use of the bark, giving it as liberally as the stomach will bear, or administering it in the form of a clyster. Opiates, given freely, have the effect of abating irritation and pain, and of restraining diarrhœa, should that come on naturally, or by the use of the bark. Diarrhœa should not be allowed to continue long, and is always to be restrained, unless it evidently give relief, and the fæces be very fœtid. In this

He gives vomits, and afterwards three or four grains of ipecacuanha every three hours. If he uses purgatives, he conjoins them with tonics. 4th. With phlogistic affection or inflammation of the womb, attended with great weight about the pelvis, swelling, pain, and hardness in the lower belly, suppression of evacuations, sharp frequent pulse, acute fever, and the countenance not so sunk as in the putrid disease. He advises venesection, leeches, and low diet. The same remedies, with blisters, are to be used, if pleuritic symptoms occur. 5th. Sporadic fever, proceeding from cold, passions of the mind, &c. Puerperal fever he considers as apt to terminate in milky deposits in the brain, chest, legs, &c.

When upon this subject, it may not be improper to mention, that a young practitioner may mistake spasmodic affections or colic pains for puerperal inflammation, for in such cases there is often retching and sensibility of the muscles, which renders pressure painful. But there is less heat of the skin, the tongue is moist, the pulse, though it may be frequent, is soft, the feet are often cold, the pain has great remissions if it do not go off completely, there is little fulness of the belly, and the patient is troubled with flatulence. It requires laxatives, antispasmodics, anodyne clysters, and friction with camphorated spirits. Blood drawn in this disease, after it has continued for some hours, even when the woman is not in childbed, is sisy, and it is always so in the puerperal as well as the pregnant state, although the woman be well.

case, diluents should be employed. If there be tenesmus, anodyne clysters should be given. If there be not, emollient clysters often give temporary relief. Should the bowels be costive, which is seldom the case indeed, a gentle laxative is to be given, which ought to be of the saline kind, and will likely bring away dark coloured fœtid stools. If the bowels have been formerly very open, but the diarrhœa have stopped naturally, or by the use of opiates, a gentle laxative or clyster should be given, if more than a day pass without a stool, as the accumulation of morbid fecal matter is equally hurtful with much purging. Vomiting is to be restrained by solid opium, and by an opium plaster applied to the region of the stomach: sometimes saline draughts are of service. Nausea has been supposed to indicate the necessity of an emetic; but if no relief be obtained from natural vomiting, which most practitioners admit, I do not see that artificial vomiting can be useful, nor does experience support the practice. Fomentations, and anodyne frictions, sometimes abate the pain in the abdomen. The strength should be supported by light nourishment, and a moderate proportion of wine, or other cordials. Digitalis and other diuretics have been given, to carry off the effused fluid, but they have no effect. Emetics and antimonials, I am afraid, do more harm in general than good. Upon the whole, we trust chiefly to tonics, in the cure of the puerperal fever; we support the strength, and regulate the state of the alvine discharge, preventing accumulation of morbid fæces on the one hand, and restraining immoderate evacuation on the other. (*m*)

(*m*) On no subject, perhaps, are practitioners more divided than respecting the treatment of puerperal fever. From different views of the nature of the disease, two modes of practice have indeed been deduced almost diametrically opposite. Whatever may be the propriety of the plan, recommended by Mr. Burns, as applicable to puerperal fever in Europe, it would, undoubtedly, be mischievous, if adopted here.

The disease in this country is very generally a fever of increased action, and requires for its cure pretty copious depletion. Bleeding freely, purging actively with the neutral salts, and blisters to the region of the abdomen, are the remedies which have succeeded best in my hands. ED.

CHAPTER XIV.

Of Swelled Leg.

THE swelling of the inferior extremity, in puerperal women, is usually preceded by marks of uterine irritation, and a tender state of the parts within the pelvis. About a fortnight after delivery, sometimes later, sometimes a little earlier, the patient complains of pain in the lower belly, increased by pressure, and occasionally has pain and difficulty in making water. The uterine region is somewhat swelled. The pulse is frequent, the skin hot, the thirst increased, and these symptoms are often preceded by shivering. Stiffness and pain are now felt in one of the groins, near the passage of the round ligament, or the exit of the tendon of the psoas muscle, or in some cases about the origin of the sartorius and rectus muscles. The pain is attended with swelling, and these two symptoms may proceed gradually down the limb; but more frequently, pain is felt suddenly in the calf of the leg, or at the knee, near the insertion of the sartorius muscle, and is most acute in the course of that muscle; it also darts down to the heel. Within twenty-four hours after the pain is felt, the limb swells, and becomes tense; it is hot but not red; it is rather pale, and somewhat shining. This swelling sometimes proceeds from the groin downwards; in other cases, it is first perceptible about the calf of the leg, and proceeds upwards. It generally procures an abatement of the pain, but does not remove it. On the contrary, the patient cannot move the leg, and it is tender to the touch. The pulse is very frequent, being often 140 in the minute; the tongue is white and moist, the countenance has a pale chlorotic appearance, the thirst is considerable, the appetite is lost; the bowels are either bound, and the stools clay-coloured, or they are loose, and the stools very fætid. The urine is muddy; the lochial discharge sometimes stops or becomes fætid, in other cases is not at all affected. The nights are spent without sleep, and the patient perspires profusely. All the parts within the pelvis are tender, and the os uteri is open, but not

more painful when touched, than the sides of the vagina or the internal muscles.

The period at which the swelling reaches the acmé is various, but often it is accomplished in twenty-four or forty-eight hours. It seldom makes the limb above double its usual size. Generally in ten days, sometimes in even two or three, the febrile symptoms, swelling, &c. abate; but it may happen that they are protracted longer, and do not go off entirely for some time. When they go off, the patient is left feeble, and the limb stiff, weak, and often for a time powerless. In the course of the cure, we frequently feel hard bumps in different parts of the limb, especially on its back and inside. These are not glands; some consider them as indurated lymph, others as muscular contractions. At the top of the thigh, the inguinal glands are often felt swelled, even at the beginning of the complaint; but in some cases, I have found them not at all affected.

If the skin be punctured, no serum is effused, at least not in the same way as in anasarca, and the swelling is not increased in a depending posture.

In one or two instances, suppuration has taken place; mortification has also happened.

It is always a length of time before the patient recover, for the swelling does not go soon entirely away, and the strength is long of returning. In some instances, the limb remains permanently swelled and feeble.*

After one leg has been affected, and even before the complaint has completed its course there, the other may become diseased; and this has no influence on the progress of the first. This second attack is sometimes the worst of the two, owing, perhaps, to the previous debility. A coldness is often felt in the second leg, before the paroxysm comes on, and

* In some instances, the patient has been sensible of the pain, which expelled the child, rushing violently down the leg. After a short time it has abated, but about the usual period this disease has appeared. After the pain and swelling have gone off, the muscles are in some cases left paralytic, and the joints loose and weak.

pain in the belly precedes the attack. The first leg may be a second time attacked.

This is not generally a fatal disease, but it is tedious, and is often accompanied with hectic symptoms. Death, however, may be caused by suppuration or gangrene; or by exhaustion, proceeding from the violence of the constitutional disease; or from exertion made by the patient, which has sometimes proved suddenly fatal.

The production of this disease does not seem to depend on the circumstances of the labour, for it appears both after easy and difficult deliveries. Those who give suck, and those who do not, the strong and the weak, are affected by it. It has succeeded an abortion, or suppression of urine. I am inclined to consider the cause to be a morbid state of the parts within the pelvis, which sometimes produces merely a stiffness and swelling at the passage of the round ligament. Puzos and Levret consider the disease as proceeding from a depot of the milk. Most modern writers attribute it to an affection of the lymphatics, which are ruptured, or have their circulation interrupted by swelling of the inguinal glands. Dr. Hull considers the disease as an inflammatory affection, suddenly succeeded by effusion. I refer, for a view of the different opinions, to his *Treatise on Phlegmatia Dolens*. The disease seems to depend partly on inflammation, and partly on nervous irritation; and the cure consists in lessening the one, and allaying the other.

The treatment naturally divides itself into that of the limb, and that of the constitution.

Our first object is to check the disease within the pelvis. For this purpose, leeches ought to be applied to the groin, and we should open the bowels with gentle laxatives; afterwards cloths, wet with tepid solution of acetate of lead, should be applied to the groin. These means may prevent the swelling, or render it milder. If the disease have already taken place in the limb, fomentations, and gentle friction, with anodyne balsam, or camphorated oil, will be useful. The bowels should still be kept regular, but the patient is not to be purged. Opiates are useful, to allay irritation. When the acute symp-

toms are over, we endeavour to remove the swelling, and restore the tone of the part, by friction with comphorated spirits, and the use of the flesh brush, and a roller applied round the limb. The liberal use of solution of cream of tartar is also, in many cases, of service. If the disease threaten to be lingering, small blisters may be applied to the groin. If much weakness of the limb remain, the cold bath is proper, or sometimes a bath of warm sea-water.

Besides these means, we must also employ remedies for abating the fever, and constitutional affection. At first we use saline draughts, but these are not to be often repeated, and must not be given so as to procure much perspiration. In a short time they should be exchanged for bark, sulphuric acid, and opiates, which tend to diminish the irritability. In the last stage, we give a moderate quantity of wine. When the pain shifts like rheumatism, bark, with small doses of calomel, are useful. If the uterine discharge be fœtid, it is proper to inject tepid water, or infusion of chamomile flowers, into the vagina. Exposure to cold, during the first stage of recovery, may cause a relapse. The treatment thus chiefly consists in palliating symptoms, and supporting the strength. I cannot, however, agree with those who, in the very outset of the disease, give wine liberally, as there certainly does, at that time, exist an inflammatory tendency. The diet should be light and nutritious.(n)

(n) I have met with but two cases of this strange affection, which I treated, very successfully, by copious bleeding, by very active purging, and by blisters applied to the groin, and extending up the abdomen. In these cases there was every appearance of high inflammatory action, accompanied with much pain. If the preceding remedies should fail, and the disease run on obstinately to the second stage, I would recommend large doses of opium to allay the pain, and calomel in the ordinary quantity, with a view of exciting salivation. E.D.

CHAPTER XV.

Of Paralysis.

SOME women, after delivery, lose for a time the power of the inferior extremities, although they may have had a very easy labour. This paralysis may exist in different degrees, and in some cases the muscles are painful. Sometimes it is attended with retention of urine. It is not accompanied with any cephalic symptoms. In general, the disease wears off in a few weeks. Friction, the shower bath, tonics, and gentle exercise on crutches, are the means of cure. The bowels are also to be kept open.

After a severe or instrumental delivery, the woman may complain of excessive pain about the loins and back, attended with lameness, or even palsy. This is sometimes a very tedious complaint, but usually it is at last removed. The tepid bath, with anodyne embrocations, relieve the pain; and at a more advanced period, sea bathing is proper. (o)

Hemiplegia may attack women in the puerperal state, as well as at other times. It proceeds from the same cause, and requires the same treatment as usual. If death take place, blood is found extravasated in the brain.

CHAPTER XVI.

Of Puerperal Mania.

ALL women, in the puerperal state, are more irritable, and more easily affected, both in body and mind, than at other times, and some even become delirious. The period at which this mental disease appears is various, but it is seldom if ever sooner than the third day, often not for a fort-

(o) Active purging is very useful in this disease. I have also known much good to be derived from blisters to the sacrum. ED.

night, and in some cases not for several weeks after delivery. It sometimes begins like a fever, but in other instances the woman becomes rather suddenly delirious. The patient is often extremely voluble, talking incessantly, and generally about one object; supposing, for example, that her child is killed, or stolen; or although naturally of a religious disposition, she may utter volleys of oaths, with great rapidity. In some cases she is less talkative, but is anxious to rise and go abroad. It is not, indeed, possible to describe the different varieties of incoherence, but there is oftener a tendency to fury than melancholy. She always recognises surrounding objects, and either answers any question put to her, or becomes more exasperated by it. The eye has a troubled appearance, the pulse is frequent, the skin hot, the tongue white; the secretion of milk is often, but not always diminished, and the bowels are usually costive. In some instances the patient recovers in a few hours, in others the mania remains for several weeks, or even some months; but I believe it never becomes permanent, nor does it prove fatal, unless dependent on phrenitis. Blood-letting has been advised in this disease; but I agree with those who consider it as hurtful, or at least as useless. The best practice, I think, is to open the bowels, keep the surface gently moist, by means of saline julap, and allay irritation with liberal doses of hyoscyamus and camphor. Blisters have by some, for whose opinion I have much regard, been considered as useless, or detrimental; but I think I have seen them do good, after they had discharged freely. Opium is a very doubtful remedy; it oftener makes the patient restless, than procures sleep: but in the wane of the disease, it does in some cases agree with the patient. The mind is to be managed with prudence and attention, and the patient kept as much as possible from exerting herself. (*p*)

(*p*) In the management of this disease, we are to observe the same rules as are applicable to mania generally. It would seem, however, to be more frequently attended with extreme nervous irritation, than inflammatory action. In the former state, I have seen the most manifest advantage

Some are peculiarly liable to this disease after delivery. In such cases, the patient must be carefully watched after parturition. Every irritation must be removed, every source of alarm or agitation obviated, and the camphorated julap with gentle laxatives will be proper remedies. If the patient do not sleep well, hyoscyamus should be given.

Melancholy usually comes on later than furious delirium. The disease differs nothing, in appearance and symptoms, from melancholy madness occurring at other times. It is obstinate, but goes off after the child is weaned, and the strength returns. It is therefore proper to remove the child, and send the patient to the country as soon as possible. In some instances, both kinds of madness seem to be dependent on a morbid irritation, such as inflammation of the mamma, &c. Here our attention must be directed to the cause.

Inflammation of the coverings of the brain usually appears still earlier than delirium, from irritation. It appears within the second day after parturition. The pulse continues frequent from the time of delivery; the patient does not sleep, but is watchful; she soon complains of confusion, rather than pain in the head; hears very acutely, speaks in a hurried manner. Then furious delirium comes on; she pays no regard to, or at least does not seem to recognise, objects around her; the eyes are sparkling and wild, and very sensible to the light. The lochia are not suppressed, nor are the bowels bound. In three or four days, the patient sinks into a low comatose state, and dies. This disease requires the prompt and early use of the antiphlogistic treatment, general and local blood-letting, the use of purgatives, and the application of a blister to the scalp. The inflammatory symptoms being subdued, the delirium abates, or goes off, by the use of remedies formerly pointed out.

from large and repeated doses of the tincture of hops, where opium only aggravated the symptoms. In the latter state, we should bleed and purge as long as there is increased excitement. Blisters to the head, and to the extremities, in either state will be beneficial. They will alike allay nervous irritation, or subdue inflammatory action, and thus produce calmness and ease. They are often, especially in mania, if applied in the proper condition of the system, which is after the excitement is a little reduced by previous blood-letting, *the best of our anodynes*. E.D.

CHAPTER XVII.

Of Bronchocele.

SWELLING of the thyroid gland takes place, so much more frequently after parturition, than under other circumstances, that it may with propriety be noticed here. It appears within a few days after delivery, and is often attributed to exposure to cold. In other cases, the woman feels, during labour, as if something had given way about the throat. It may remain long in an indolent and stationary state, being productive either of no material inconvenience, or only of a slight difficulty of swallowing. In other instances, it augments in size, and becomes dangerous from its pressure on the neighbouring parts: or it inflames, forms a large abscess, and bursts. Enlargement of the left lobe is more dangerous than that of the right.(q)

(q) There is an intimate connexion between the thyroid gland and the brain. It is well known that, very generally, one of the most remarkable symptoms of bronchocele is a gradual, though certain, decay of the intellectual faculties. This is strikingly exemplified in the Cretans of the Alps. The goitre, with this miserable race of people, is commonly, if not always, attended with idiotism. In the lower animals, if the gland be removed, a train of nervous affections will speedily follow, and finally fatuity, or a total extinction of mind. This has been proved by a series of experiments made, as I have understood, by the celebrated Mr. Cooper of London. As soon as I heard of these facts, it occurred to me as being not at all improbable, that one of the hitherto unknown uses of this organ might be to stay the circulation in cases of undue determination of blood to the head. I was assisted to this inference by the recollection of having seen it somewhere remarked, that in the cases alluded to, the gland is uniformly swelled, more or less with blood. If, as it now seems to be admitted, that the brain requires a certain proportion of blood for the regular performance of its functions, and that these will be equally impaired by any excess or deficiency of it, we can have no difficulty in conceiving how the brain becomes affected, either by an enlargement or total extirpation of the gland.

With respect to the production of *puerperal bronchocele* we have an obvious explanation. During parturition, and particularly if it be laborious, there is very frequently an afflux of blood to the head, and, as may be

Various remedies have been employed, such as burnt sponge, calomel, muriate of lime, &c. but these have seldom much effect. Repeated blisters, and long continued friction, are more useful. If the tumour threaten to enlarge, which it often does, after every succeeding pregnancy, or even independent of gestation, it has been proposed to extirpate the tumour, or to tie the arteries going to it. If there be a tendency to suppuration, it ought to be encouraged, and treated on general principles.

CHAPTER XVIII.

Of Inflammation of the Mamma, and Excoriation of the Nipples.

INFLAMMATION of the mamma may take place at any period of nursing, but is most readily excited within a month after delivery. It may be excited by the direct application of cold, retention of the milk in consequence of sore nipples, mechanical injury, &c. or it may occur in that febrile state, called weed. The inflammation may be confined to the cellular substance, or it may affect the gland; it may be attended with much general swelling of the breast, or the tumour may be very circumscribed; it may run its course rapidly, or very slowly; and when abscess forms, and the integuments burst, we may have matter alone discharged, or

observed, a considerable distension of the thyroid gland. By this distension, which occasionally is so great, as to induce the women to believe, "*that something has given way about her throat,*" the gland is relaxed; it receives thereby a larger quantity of blood, which necessarily nourishes a morbid growth of the part.

As some of the preceding notions have a close resemblance to those now maintained by Dr. Rush, it is proper for me to mention, to avoid the suspicion of having derived them from him without acknowledgement, that they were adopted and openly promulgated by me at least five years before he uttered in conversation or taught in his lectures, or published one syllable in relation to the subject. EN.

there may be a slough of considerable magnitude found within the abscess. Usually, there is a considerable degree of fever attending the complaint, and the pain is often severe, especially when the breast is extensively affected. It is a very difficult thing to prevent this inflammation from ending in suppuration. It is to be attempted, however, by purgatives, the application of leeches to the painful part, and afterwards cloths wet with pretty strong solution of acetate of lead, (r) which, however, ought not to be very cold, as this is apt to excite shivering. If the breast be distended with milk, it will be proper to have a little taken away occasionally. When the pain becomes throbbing, and the integuments somewhat red, a warm poultice is proper, to assist the suppurating process. After matter is formed, it ought to be freely let out, by an opening of sufficient size, provided there be no appearance of the abscess bursting soon of its own accord. This prevents insinuation of matter in the cellular substance of the breast. If the puncture be followed by a troublesome oozing of blood from the wound, dry lint and compression must be used. In one instance, I knew the hemorrhage prove fatal. After the abscess bursts, there is for some time a discharge of purulent matter, which frequently is mixed with milk; then the surrounding hardness gradually abates. The poultice may be continued for several days, as it promotes the absorption of the indurated substance; but if it fret the surface, and encourage a kind of phagedenic erosion, it is to be exchanged for mild dressings. A little fine lint is to be applied on the aperture, but not so firmly as to confine the matter; and over this, a cloth spread with spermaceti ointment. In some cases, lint dipped in oil forms a good dressing. If an indurated substance remain, after the abscess heals, the part should be rubbed gently with camphorated oil, and the bowels kept open with cream of tartar. In some instances the milk returns, and the patient can nurse with the breast which was affected; but more frequently it does not, and the

(r) I know of nothing so good in these cases as bathing the breast with a mixture of laudanum, brandy, and hartshorn. E. 2.

child is brought up on one breast. It may even be requisite, if the fever and pain be great, and the secretion of milk be much injured, to take off the child altogether.

Excoriation of the nipple is a very frequent affection, and often excites that disease we have just been considering. The ulcer may be extensive, but superficial; or it may be more circumscribed, but so deep as almost to divide the nipple. When the child sucks, the pain is severe, and sometimes a considerable quantity of blood flows from the part. In some instances, an aphthous state of the child's mouth excites this affection; in others, excoriation of the nipple affects the child. A variety of remedies have been employed. Spirituous and astringent lotions have been used previous to delivery, with a view of rendering the parts more insensible, but they have not always that effect. When the complaint comes on, fifteen grains of sulphate of zinc, dissolved in four ounces of rose water, form a very useful wash, which should be applied frequently. Solutions of sulphate of alumine, acetate of lead, sulphate of copper, nitrate of silver, &c. in such strength as just to smart a little, are also occasionally of service; and it is observable, that no application continues long to do good. Frequent changes, therefore, are necessary. The nipple should always be bathed with milk and water, before applying the child. Dressing the part, with lint spread with spermaceti ointment, is sometimes of use. A combination of white wax, with fresh butter or melted marrow, with or without vegetable additions, form popular applications. Stimulating ointments, such as ung. hyd. nit. diluted with axunge, are sometimes of service; or the parts may be touched with burnt alum. It is often useful to apply a glass over the nipple, to defend it, or a chalk cup, which absorbs the discharge. It is also proper to make the child suck through a teat fixed on a metallic nipple, that the irritation of its tongue or mouth might be removed. This often is of great service, but it does not always succeed; and some children cannot suck through it. When all these applications fail, it is necessary to take off the child, as a

perseverance in nursing exhausts the strength, and may excite fever. The part then heals rapidly.

Venereal ulceration, accompanied with swelled glands in the axilla, and a diseased state of the child's mouth, requires a course of mercury.

It may be proper, before concluding this chapter, to add some remarks on causes disqualifying a woman from nursing. If the nipple be very flat, and cannot by suction be drawn out, so that the child can get hold of it, the woman cannot nurse. A glass pipe, however, frequently used, sometimes remedies this defect. A deficiency of retentive power, so that the milk runs constantly out, is another disqualification, and it is not easy to find a remedy. When the milk disagrees with the child, having some bad quality, we are also under the necessity of employing another nurse. If the mother be very delicate, or be consumptive, or affected with obstinate melancholy, or have her eyes much inflamed, or the sight injured by nursing, or if the secretion be very sparing, she must give up nursing. Some delicate women suffer so much from nursing, that chlorotic or phthisical symptoms are induced. In this case, she must take off the child. Opiates are useful at bed-time, to procure sleep, and the bowels are to be kept open. Many women, after delivery, are subject to disorders of the alimentary canal, especially diarrhœa and worms. These impair the health, and diminish the secretion of milk. They are to be treated with the usual remedies. Anasarca, jaundice, erysipelas, &c. may also occur in the puerperal state, and prevent nursing. The ordinary methods of cure are to be employed.

When a woman weans a child, or from the first does not suckle it, it is usual to give one or two doses of some purgative salt, by way of lessening the secretion of milk. The secretion is also checked by keeping off the child; but if the breast be very much distended, so much must be taken away occasionally, by suction, or milking the breast, or applying a

warm glass bell, as relieves the feeling of tension or pain. If this be neglected, inflammation may be excited.*

CHAPTER XIX.

Of the Signs that a woman has been recently Delivered.

WE discover that a woman has been recently delivered by finding that the external parts are relaxed, and redder, or of a darker colour than usual. There is a sanguineous or lochial discharge. The uterus is enlarged, and has neither the shape of the gravid nor unimpregnated uterus; the cervix is indistinct, and the os uteri is nearly circular, and will admit two or more fingers. The abdomen is prominent, and the integuments relaxed and wrinkled. The breasts are enlarged, and contain milk; but it is possible for this secretion to take place independently of pregnancy.

Very contradictory accounts have been given by anatomists of the appearance and size of the uterus, at different periods, after delivery. If the woman die of hemorrhage, or from any cause destroying her soon after delivery, the uterus is found like a large flattened pouch, from nine to twelve inches long. The cavity contains coagula or a bloody fluid, and its surface is covered with remains of the decidua.

* Some women feel, after lying in, a considerable weakness or sensation of want about the belly, which is frequently increased by nursing. It is often produced by taking off the bandage too soon from the abdomen, which should not be done for a month at least, and is relieved by the application of a broad firm band round the belly. This is also useful, especially when made to act upon the hips, in that kind of uneasiness and dragging, which is felt about the haunches and sacrum, or loins, when the uterus threatens to prolapse, in consequence of walking too soon after delivery. These sensations, together with the disease, will continue long, and increase, if attention be not paid.

Pain in the side, or in the abdomen, which is sometimes produced by nursing, is often relieved by friction, warm plasters, and an invigorating plan. General weakness requires tonics, which must be varied.

Often the marks of the attachment of the placenta are very visible. This part is of a dark colour, so that the uterus is thought to be gangrenous, by those who are not aware of the circumstance. The surface being cleaned, the sound substance of the womb is seen. The vessels are extremely large and numerous. The fallopian tubes, round ligaments, and surface of the ovaria, are so vascular, that they have a purple colour. The spot where the ovum escaped, is more vascular than the rest of the ovarian surface. This state of the uterine appendages continues until the womb has returned to its unimpregnated state.

A week after delivery, the womb is as large as two fists. At the end of a fortnight, it will be found about six inches long, generally lying obliquely to one side. The inner surface is still bloody, and covered partially with a pulpy substance, like decidua. The muscularity is distinct, and the orbicular direction of the fibres round the orifice of the tubes very evident. The substance is whitish. The intestines have not yet assumed the same order as usual, but the distended cæcum is often more prominent than the rest.

It is a month, at least, before the uterus returns to its unimpregnated state.

We know that the woman has had a recent miscarriage, by the state of the breasts, the sanguineous discharge from the vagina, the size of the uterus, and the softness and dilatation of its mouth. If the woman die, the womb is found enlarged, its inner surface covered with the decidua, or maternal portion of the placenta. The vessels are enlarged, the tubes and ligaments very vascular; the calyx of the ovum is bloody. This, at a more advanced period, forms a kind of cicatrix, or a dusky yellowish body, called corpus luteum. This mark may exist, although the woman have not born a child, for the ovum may be blighted, perhaps even in the ovarium. It has been conjectured by some, that it may be produced even without sexual intercourse, but this point I cannot determine. I apprehend, however, that in such cases, the marks are not real corpora lutea; they have not ever been injected.

BOOK IV.

Of the Management and Diseases of Children.

CHAPTER I.

Of the Management of Children.

SECTION FIRST.

WHEN a child is born, the first thing to be done is to ascertain if it breathe or be alive. If it cry or breathe vigorously, then it may be safely separated from the mother.* This is done, by tying the navel string about half an inch from the navel; another ligature is applied an inch nearer the placenta, and the cord is divided between these with a pair of scissors. In some countries, the division is made with a sharp flint, in others by means of fire. The necessity of applying a ligature has been denied by different practitioners; but it has sometimes been found, that when the ligature had become slack, a considerable quantity of blood was lost, and even fatal hemorrhage has taken place.

When a child does not breathe soon after it is born, it is not always easy to say whether it is alive, for we have at this time, no criterion of death except putrefaction; and therefore, it behooves us always, unless this mark be present, to use means for preserving the child, by which some

* Dr. Denman, from observing that some children, after they had begun to breathe, had respiration checked, and died after the cord was tied, advises, that the ligature should never be applied till the pulsation cease. But when the child is vigorous and cries lustily, there is no occasion for delaying so long.

have been saved, after being laid past as dead. Children may be born apparently dead, in consequence of the head having remained long in the pelvis, or having been squeezed in a deformed pelvis; or owing to the cord having been compressed, either during the process of turning and delivering a child, or from its having descended before the presenting part of the child, or been so situated during labour, as to be compressed by the uterus. Some children die, owing to the head being born, covered with the membranes, some time before the body. This is the consequence of inattention, for, if the membranes be removed from the face, there is no risk of the child. In whatever mode children are still-born, the effect is referable, either to compression on the chord, first suspending, and then destroying animation; or to pressure on the brain; or to a state of insensibility and feebleness, preventing the action of respiration from taking place after birth.

In determining on our treatment of still-born children, our first object ought to be, to ascertain if the circulation be still going on in the chord. If pulsation continue, the child is not in danger from want of respiration, for the fœtal mode of living is continuing. The cause of stillness, then, is most likely a kind of syncope, or torpor, which prevents the action of respiration from being established, or it may be from compressed brain. In both cases, the skin is purple, from the blood not having been arterialised, and we have no mark of distinction till respiration begin. It is very common, in the first case, for the child to be still for a minute or more; then it makes a slight sob, and breathes low, with a sound of fluid in the throat; and then, of a sudden, respiration becomes perfect. In the second case, respiration after it begins, continues longer oppressed, and may perhaps stop, the child dying in a short time.

When the cord pulsates at the time of birth, we are not to be rash in dividing it. It is of importance to keep up the fœtal circulation, till the new mode of acting can be established, and we ought not to divide the cord in such cases till pulsation stop; because, if respiration should flag, we have the placenta as an auxiliary, if the connexion still exist, and the

pulmonary action being suspended, the fœtal mode will continue, and support life till respiration become vigorous; for the two modes of changing the blood are not incompatible. Pulsation will no doubt at length stop, either from the heart of the child stopping, or the placenta being detached from the uterus, and its function being lost; but as long as pulsation continues, and the child does not breathe perfectly and regularly, no ligature should be applied. In the mean time, some method should be adopted for exciting respiration, such as wrapping the child in warm flannel whilst it is still in bed; friction, especially over the thorax, with the hand, or strong spirits; applying spirits to the nostrils with a feather; or giving a gentle concussion to the body, as, for instance, by slapping the bottom. But the most effectual remedy is inflating the lungs, by blowing either through the barrel of a quill, or applying the mouth directly to the child's mouth, at the same time that the nostrils are held, and the cartilages of the trachea pressed gently back to obstruct the œsophagus. This attempt at inflation is to be alternated with pressure on the thorax, to force the air out again. If, by this time, the pulsation have stopped in the cord, and the child do not recover, the cord is to be divided, for connexion with the placenta is useless after the circulation stops. The cord is not to be tied, but only divided, and the child is to be removed to the fire, or put in warm water, and the artificial respiration sedulously continued. An injection is also to be administered; and if electricity could be employed, there is ground for thinking that it would be beneficial. Should the child, by these means, in a few minutes, or after a longer time, begin to breathe, a little blood will most probably issue from the cord, and the quantity will increase. If this seem to assist the breathing, and make the child more active, it is to be permitted to proceed to the extent of two or three tea spoonfuls; but if it do not manifestly produce a good effect soon, it is to be stopped with a ligature, that it may not throw the child back into a state of inaction. Even when it is of service, it must be kept within bounds, otherwise dangerous debility will be the con-

sequence.* It will be chiefly useful when the breathing does commence, but is slow and oppressed, with stupor, indicating affection of the brain.

If the shape of the head be much altered, it has been proposed, whilst other means are employing, to attempt slowly and gently to press it into a more natural shape, but of the good effect of this I cannot speak from my own experience. In footling cases, it has been supposed, that extension of the spine was a cause of death, but this, I apprehend, is seldom the case.

SECTION SECOND.

After the child is separated from the placenta, it is to be wrapped up in a piece of soft flannel, called a receiver, and given to the nurse. Next, the soft white incrustation, which generally covers the skin, is to be gently and delicately removed, by ablution with tepid water, and the use of a sponge, and sometimes of a little soap.† It is not necessary to remove every part of this, nor make such attempts as will fret the skin; but in every instance, and especially if there be reason to suspect that the mother has had gonorrhœa or chancre, the surface should be washed. It is also customary, with many nurses, to bathe the body, or at least the head, with spirits, a practice which can serve no useful purpose, but may be attended with mischief. The child being dried, it is usual to wrap a bit of soft rag round the remains of the navel string, and retain this by means of a bandage brought round the belly. It is alleged, that this is necessary to prevent umbilical hernia; but hernia does not take place because the child is not bandaged, but because the umbilicus is unusually wide; and in those

* The evacuation of blood is, indeed, seldom necessary. It is oftener of service, in weakly performed respiration, to give some gentle cordials or stimulants.

† The white substance, found on the skin of new-born children, feels unctuous like butter, but it does not melt by heat. When held in the fire on a spatula, it soon resembles curd, and then crackles or detonates, and flies off in small portions. It dissolves readily in spirit of wine, or oil of turpentine, or fixed oils, and hence butter is sometimes used for removing it; but it is also rendered miscible with water, by means of soap.

countries where no compress is used, hernia is not a frequent complaint. A tight bandage produces pain, difficulty of breathing, and other deleterious effects. The only purpose to be derived from a bandage is to retain the rag, which is, for the sake of cleanliness, applied round the cord.

It was at one time the practice to wrap the child very tightly round the whole body, and to stretch both the arms and legs, whilst the head was secured by tapes, passing from the cap to the body. A more easy method is now adopted, and it seems to be agreed upon, that the more simple and loose the dress is, the more comfortable will the child be. Nurses are peculiarly afraid of the head being cold, and therefore are apt to keep it too warm. In summer one cotton cap, I believe, is sufficient to preserve the heat, but in winter an under cap may be added, but neither of these ought to be secured by pins. Soft tapes are preferable, for this and every other part of a child's dress. The rest of the clothing consists of a short shift and a wrapper of fine flannel, which is better for a week or two than the separate pieces of dress employed by many, and which add to the time and trouble of shifting the child. All children cry when shifted and dressed, therefore the shorter and simpler that the process can be made, the better. Last of all, a cloth is to be applied, to receive the fæces or urine, and this is to be removed the moment it is soiled. By attention, a child may very early be taught to give indication when he wishes to avoid the urine or fæces, and can then be held over a pot or bason. It is proper to encourage the child to use these at regular intervals. Children should have their bottom and thighs washed and wiped dry, always after soiling themselves. The whole body ought likewise to be regularly washed, morning and evening, with a sponge and water, at first rather tepid, but soon brought to be cold, at least of the temperature that cold water has in summer. But although this is a general practice, yet some children do not agree with it, being languid, cold, and pale, after being washed, and these ought to have the water warmed a little. Plunging the child into cold water, is per-

haps, in this country, for some weeks, rather too violent a shock; but about the third month, it will be proper to do so daily.

The temperature in which children are kept, should be such as neither to increase nor diminish the natural heat of the surface. The child in utero is placed in a temperature of about 96 or 98 degrees; but its power of generating heat is probably much less than after birth. The heat of the room, and the quantity of bed-clothes, should be nearly such as would be agreeable to a healthy adult. Depressing heat is to be avoided on the one hand, and exposure to cold on the other. The apartment should be well ventilated, but the infant ought not to be exposed to the open air, for nearly a month in winter, as it is apt to produce convulsions, or catarrh, with fever, or bowel complaints.

SECTION THIRD.

It is customary to give some food before the child be applied to the breast, and very frequently medicine also, such as salt, magnesia, or manna, to purge off the meconium. The absolute necessity of either of these practices may perhaps be questioned, especially if the mother be able to suckle at the usual time. A little milk and water is at all events sufficient; and with respect to laxatives, I believe that they are seldom necessary. If, however, the meconium do not come freely away, and the child have no stool in twelve or sixteen hours, or seems to be oppressed, or troubled with pains, a little manna may be given with much advantage; but generally the milk which is first secreted, called colostrum, is sufficiently powerful. When the bowels begin to act, and the bile is plentifully secreted, it is usual for the child in consequence of absorption of bile, or perhaps of meconium, to have a yellow tinge on the skin which is called the gum. This is sometimes attended with a drowsy state. If it require any medicine at all, it is a gentle laxative.

All children are intended to be brought up on the breast, and they ought to be applied early, generally betwixt twelve and twenty-four hours after birth. Some mothers, however,

cannot, and others will not, suckle* their children, but employ another nurse,(1) or bring the child up on the spoon. If the latter mode is to be adopted, it is necessary to determine the proper diet, and the best mode of giving it.

For the first two months, it is sufficient to feed the child on a mixture of cow's milk, diluted with equal parts of water, or more if it be rich; to this, a very small quantity of soft sugar may be added. It is not to be given with the spoon, but the child is to suck it from a glass vessel, contrived for the purpose, or a tea-pot with a bit of parchment or bladder tied over the mouth, and perforated with holes. This diet may be occasionally alternated with a little weak veal or beef soup. Panado, made with crumb of bread, is not proper; and meat, made with unbaked flour, is still worse. In

* Van Helmont, and after him, Browzet and others have advised that children should not be brought up on the breast, but fed on asses and goats' milk, or a panado made of bread boiled in small beer, and sweetened with honey.

(1) In chusing a nurse, it is necessary to be satisfied that she enjoys good health, and has an adequate supply of milk. Certain rules have been laid down to enable us to ascertain the quality of the milk by its appearance; but it is sufficient that it be not too thick, and have a good taste. With regard to the quantity, we cannot judge at first, for the milk may be kept up so as to distend the breast, and give it a full appearance. A woman who is above the age of 35 years, or who has small flaccid breasts or excoriated nipple, or who menstruates during lactation, or who is of a passionate disposition, should not be employed as a nurse. Those who labour under hereditary diseases should, at least for prudential motives, be rejected. The woman's child, if alive, should be inspected, to ascertain how it has thriven, and both it and the nipple should be examined, lest the nurse may have syphilis. A woman who has already nursed several months is not to be chosen, as the milk is apt to go away in some time, or become bad. It is farther of great advantage to attend to the moral conduct of the nurse, for those who get drunk or are dissipated, may do the child much mischief.

With regard to the diet of a nurse, it is improper to pamper her, or make much difference in the quality of the food, from what she has been accustomed to. It is also proper that she be employed in some little duty in the family, otherwise she becomes indolent and overgrown.

Women's milk is paler, thinner, and sweeter, than cow's milk; it contains more saccharine and less oily matter. When the milk is either too purgative, or too binding, the nurse should be changed.

the third month, we may, besides the milk and water, and light soup, give occasionally a little spoon meat, such as panado made with the crust of fine bread, and a little salt, which is better than sugar, care being taken to break down the lumps completely. This is to be mixed with milk. Sago sallop, calves feet jelly, &c. are also very proper; and as the child advances in life, eggs in the form of light custard, &c. are allowable. Some have proposed a panado made with the flour of wheat malt. By attention, a child may be taught to eat at pretty regular hours,* especially after he is a few months old; and great care should be taken, that he do not eat too much at a time.

When a child is brought up on the breast, there is no occasion, if the supply be abundant, to give him any other nourishment for three or four months. After this time, however, it will be proper to give a little food of the kinds mentioned above, and the proportion ought to be gradually increased as we proceed to the time of weaning, by which the organs of digestion are enabled to accommodate themselves better to the change of diet which then takes place. With regard to the age at which a child should be weaned, it is not possible to give any absolute rule. In general, the longer it is delayed the better does the child thrive, provided the milk be good. At all times, delicate should be nursed longer than robust children, and, if possible, weaning should not be made to interfere with the development of teeth, nor be attempted in the prospect of, or soon after the cure of any debilitating disease. If the mother's health permit, children may be suckled from nine to twelve months. After the child is weaned, the diet must be carefully attended to, and should consist of light soup, eggs, bread and milk.

† It is also of advantage, that when a child is brought up on the breast, he be not applied at all hours indiscriminately; and no child should be allowed to suck whilst the nurse is asleep, as he is apt to surfeit himself.

CHAPTER II.

Of Congenite and Surgical Disease.

SECTION FIRST.

WHEN a child is born, it is necessary to ascertain that it have no cogenite imperfection, or have met with no accident during birth. I can here only make a few short remarks on some of the most frequent and important imperfections. The first I shall notice, is the hare-lip, which may exist in different degrees, and be accompanied with a vacancy in the palate. Sometimes an operation has been performed soon after birth, but it often fails, and occasionally the child dies. It is better to delay it for ten or twelve months. In the mean time, the child must be brought up on the spoon, unless the defect be so trifling, as to permit the child to suck a large nipple.

SECTION SECOND.

Imperforated anus may exist in different degrees. There may be an appearance of anus, but an obliteration a little higher up. This is discovered, by introducing a bit of oiled paper rolled up, which ought always to be done when the child is long of voiding the meconium. If the paper be soiled with fæces, we may be sure that the rectum is pervious. A blunt probe, cautiously introduced, will also ascertain the state of the gut. Sometimes the anus is covered with a thin membrane only. In other cases, a great part of the rectum is wanting, or it terminates in the bladder of the male, or vagina of the female, which last is not a fatal deviation. It is proper always to make an incision at the anus, or at the spot where it ought to open, if there be no mark of it; and this is to be carried about half an inch or an inch deep. If no intestine be found, a trocar or lancet may be passed a little deeper in the proper course of the rectum. If by any of these means, the bowel be opened, a tent should be employed, to keep the

aperture from closing.* But if it be not readily found, we are not to prosecute the dissection farther, but must form an artificial anus, by making an incision at the lower part of the left iliac region, sufficiently large to allow the colon to be brought out, opened, and the extremity retained to the wound.†

Imperforated urethra is chiefly met with in the male sex, and is to be remedied by an artificial opening in the proper direction, if the urethra seem to be pervious to a certain extent. But if it be altogether wanting, relief in the mean time must be obtained, by puncturing the bladder. Retention of urine, not dependent on malformation, is readily removed, by introducing a probe into the bladder. Deviations in the structure of the vagina and hymen have already been considered.

Imperforated meatus auditorius is very rare, and can seldom be remedied, except there be merely a membrane stretched across the canal. Adhesion of the eye-lid is often complicated with a defect in the eye-ball itself; but when this is not the case, an operation will be advisable.

SECTION THIRD.

Sometimes the umbilicus is peculiarly large, and hernia takes place soon after birth, but still more frequently betwixt the second and fourth month. Two modes of treatment may be adopted. The first is compression, carefully maintained, which should be always tried. This in some instances, produces a radical cure; the umbilical opening contracting, which it never does in adults. The second mode is, reducing the intestines, and tying the sac with a single or double ligature. It has also been proposed, to open the sac, and close the um-

* In a case operated on by M. Cervenon, where the incision was obliged to be carried an inch high, it was necessary to use a bougie for a year. The child was enabled to retain the fæces, but the anus appeared as if it were sunk an inch deeper than usual. *Recueil Period.* tom. I. p. 36.

† Vide Observations on this subject, by Dumas and Allan, in the *Recueil Period.* tom. III. p. 46 and 123; and a case in point by Duret, in tom. IV. p. 45.

bilical aperture by pins or stitches; but this has no advantage over the double ligature. Sometimes, a very great portion of the intestines is found protruded at birth, into the sheath of the cord. This may be complicated with an imperfect or transparent state of part of the abdominal parietes; but whether it be or not, the child generally dies within forty-eight hours. The abdomen is too small to receive back the intestine quickly; and even although it could be reduced, the child, if we may judge from experience, has no great probability of existing. In one case, Mr. Hey found the tumor burst during labour. Other species of hernia are to be treated on general principles.

SECTION FOURTH.

Spina bifida is an imperfection of the vertebral canal and the spinal marrow. The bone is deficient generally about the lumbar vertebræ: a tumor is formed externally, which contains a fluid, and the skin is usually livid. The marrow stops at the commencement of the tumor, but sometimes begins again below it; or small nervous twigs arise from the inner surface of the sac, and pass out to form the nerves of the inferior part of the body. This is a fatal disease, and death is generally preceded by inflammation or gangrene of the tumor. In some instances, the sac is open at the time of birth.

The object, in this case, is to preserve the tumor entire as long as possible, for the child dies soon after it bursts. Astringent lotions are commonly employed. Ointments, containing preparations of lead, are also used.

SECTION FIFTH.

Marks and blemishes are very frequent, and may be placed on any part of the body. They are of two kinds. First, simple discoloured patches, generally of a red colour, and not elevated. These are not dangerous, but admit of no cure.(s)

(s) These congenite deformities have hitherto been considered as incurable. This is true with regard to many cases; but there are others which may undoubtedly be relieved. They seem to consist, as has been very ingeniously suggested by Mr. J. Bell, in an aneurismal enlargement of the

Second, elevated discoloured marks, which are of a purple hue, and very vascular. These are apt to increase, and at last bursting, a fatal hemorrhage may take place. They may be seated on the face, or in the lip, eye-lid, &c. or on the spine,

vessels of the part. Adopting this suggestion, the celebrated Mr. Abernethy has deduced a very plausible mode of treating these affections. There can be no doubt, he says, "that the repletion, distension, and consequent enlargement of the dilated vessels, depend upon a kind of inflammatory action of the surrounding arteries; for if that be wanting, the mark ceases to enlarge, and if present, it increases in size in proportion to the degree of inflammatory action." The success of his practice is shown by the following cases.

A child about two months old was brought to St. Bartholomew's Hospital with this unnatural enlargement of vessels, distributed every where beneath the fore arm, from the wrist to the elbow. In a short time it had swollen to that degree, that the circumference of the affected fore-arm was twice the size of the other. The vessels were large and contorted; and to give the reader an idea of their appearance, I may mention that the child's mother affirmed that they resembled the entrails of a pig, with which she had either been frightened or disgusted during her pregnancy.

The skin was of a dusky hue, and had not its natural smoothness of surface. The heat of this fore arm was much greater than that of the corresponding sound one. Pressure forced the blood out of the vessels, and temporarily diminished the bulk of the limb, and made it of a paler colour. The child's mother lives at Turnham Green, where Mr. Graham, an ingenious surgeon, who was for a long time a student at St. Bartholomew's Hospital, also resides. I requested this gentleman to take charge of the case, and try the effect of the following plan of treatment, which it seemed to me right to institute. First, I was desirous of ascertaining whether a permanent and equable pressure would not prevent the distension and consequent enlargement of the turgid vessels; secondly, whether reducing the temperature of the limb would not diminish the inflammatory action, upon which their repletion seemed to depend. These two intentions admitted of being readily accomplished. A many-tailed bandage of sticking plaster seemed adequate to effect the first, and wetting the limb with water the latter. These measures were judiciously carried into effect by Mr. Graham; the pressure was first made slightly, and afterwards more forcibly, as the part seemed to bear it without inconvenience. A roller was applied over the plaster and kept wet, if the limb felt hotter than natural, so as to regulate its temperature. The success of these measures exceeded our most sanguine expectations. The size of the limb gradually diminished, and its temperature became natural. After six months, Mr. Graham removed the bandages, which it was not necessary to continue any longer. The limb was in some degree wasted, from pressure and disease, but it soon gradually re-acquired its natural size. After the bandages had

resembling spina bifida, but are more solid or spongy, and the bone is not deficient. These ought to be extirpated, as soon as they begin in the smallest degree to increase. Small marks have occasionally been removed by raising the skin with a blister, and then applying mild escharotics.

SECTION SIXTH.

Children may, especially after tedious labour, be born with a circumscribed swelling on the head. This seems to contain a fluid, and has so well defined hard edges, that one, who for the first time saw a case of it, would suppose that the bone was deficient. It requires no particular treatment. By applying cloths dipped in brandy, the effused fluid is soon absorbed.

been left off for a month, I saw the child. The skin was pale and had a slightly shrivelled appearance. The contorted vessels felt like solid chords interposed between it and the fascia of the fore-arm.

A child had this unnatural state of the vessels in the orbit of the eye. They gradually increased in magnitude, and extended themselves into the upper eye-lid, so as to keep it permanently closed. The clustered vessels also projected out of the orbit, at the upper part, and made the integuments protrude, forming a tumor as large as a walnut. Of course, the removal of this disease did not appear practicable. I was consulted on this case by Mr. Hurlock, whom I told of the success of the former experiment. Pressure to any extent was here evidently impossible; but the abstraction of heat, and consequent diminution of inflammatory action might be attempted. I recommended that folded linen, wet with rose water saturated with alum, should be bound on to the projecting part, and kept constantly damp. Under this treatment the disorder as regularly receded as it had before increased. After about three months it had gradually sunk within the orbit, and the child could open its eye. Shortly afterwards all medical treatment was discontinued, and no appearance of this unnatural structure remains.

A third case of a very extensive mark of this description, covering the back and shoulder, got well, as I am informed, by the same treatment. I have not, however, been able to learn the particulars. It appears to me probable, from the foregoing cases, that if the preternatural distension of the vessels could be prevented, the blood might coagulate in them; and thus this unnatural contexture of vessels, being rendered impervious, might become obliterated. E.D.

SECTION SEVENTH.

Distortions of the feet are not uncommon. They are called *vari*, when the foot is turned inwards; *valgi*, when outwards. These and similar deviations are to be cured by pressure, applied with proper bandages adapted to the nature of the case. They must operate constantly, but gradually.

SECTION EIGHTH.

When the *frenum linguæ* is too short, or attached far forward, the child can neither suck well, nor speak distinctly. It is very rare in its occurrence. I have not seen two children where it was really necessary to perform any operation; for in all the rest, the child sucked the finger, or a good nipple, very readily. The operation consists in dividing to a sufficient extent the *frenum*, with a pair of blunt pointed scissors. If the artery be imprudently cut, the hemorrhage is to be checked by compression or cautery.

SECTION NINTH.

Imperfection or malformation of the heart is a very frequent occurrence; or the *fœtal* structure may continue long after birth. If the imperfection be great, the symptoms come on almost immediately after birth; but if slight, or consisting merely in a continuation of the *fœtal* structure, they may not come on till the child begin to walk, or get teeth, or even later. The child is dark coloured, or the skin has a dirty appearance, the nails and lips are livid, the breathing is more or less difficult, and the child is subject to attacks of asthma, or a kind of suffocating cough, like that in *peripneumonia* or *hooping cough*; and whenever this attacks an infant, I augur very ill. I have no remedy to propose. Comparative ease may be obtained, by keeping the child as quiet as possible, avoiding a loaded stomach, or costive state of the bowels. For an account of the different kinds of malformation, I refer to my brother's *Work on Diseases of the Heart*.

SECTION TENTH.

Children have sometimes a swelling of the breasts after birth. This is chiefly owing to secretion of a milky fluid, and much injury is often done by attempting to squeeze it out. Gentle friction with warm oil is of service; but if inflammation come on from rude treatment, saturnine lotions must be employed.

Hydrocele generally goes off, by applying compresses dipt in solution of muriate of ammonia. A puncture is rarely necessary. Phymosis requires astringent lotions. Discharges of bloody or serous fluid from the vagina or urethra, are easily cured by ablution. Prolapsus ani is to be cured, by keeping the bowels open, using the cold bath, and returning the gut whenever it protrudes. Incontinence of urine, during the night, often depends on a bad habit, and is to be treated accordingly. When it continues long, the cold bath is proper. Excoriation of the navel yields readily to cleanliness, and dressing with cerussa ointment; but if the constitution be bad, gangrene may take place. This is to be managed, by applying camphorated spirit of wine, supporting the strength, and keeping the bowels open with calomel. Hemorrhage from the navel, after the cord falls off, is to be checked by compression or caustic. Scalds and burns are best cured, by applying instantly cloths wet with strong vinegar, and afterwards employing ung. resinosum, diluted with oil of turpentine. Inflammation of the membranes of the nostril produces sonorous breathing. It is relieved by gently anointing the membranes with oil.

SECTION ELEVENTH.

The mucous secretion of the nostril is sometimes exceedingly fetid, so that it is disagreeable to come near the child. The mucus dries and comes away in thin pieces. Astringent injections, stimulating liniments, and a variety of local applications, as well as internal remedies, such as tonics, mercury, &c. have been tried. These have not always, however,

a good effect. At the age of puberty, the factor sometimes spontaneously ceases.

SECTION TWELFTH.

Infants are subject to inflammation of the eye, which is most frequently of the kind, called purulent ophthalmia.* This begins with redness of the eye-lids, which soon swell so much as to prevent their being opened. Then a copious and constant discharge of thick yellow matter takes place. This is found also spread over the eye. If the disease continue, ulceration of the eye, or a speck on the cornea, is produced, or the eye itself may burst. In bad cases, the eye-lids are also turned out, especially when the child cries. Both eyes are generally affected. This disease is cured sooner by astringent applications than by other treatment. A solution of sulphate of zinc in rose water, may be injected with a small syringe into the eye, two or three times a-day. Mr. Ware recommends four ounces of sulphate of copper and of armenian bole, with an ounce of camphor, to be mixed. Of this an ounce is to be added to four pounds of boiling water, and allowed to settle. A drachm of the solution is to be added to an ounce of water. When the eye-lids are turned out, he advises a poultice to be applied, made with equal parts of curd, formed by adding alum to milk, and lard or alder ointment. The bowels are to be kept open.

SECTION THIRTEENTH.

Children are subject to spongoid disease of the eye. The ball becomes slowly diseased, and its structure changed, so that all the parts are confounded, and the optic nerve becomes black or brown. The tumor bursts, and a fungus shoots out. The bones become carious, the disease spreads to the brain, and the patient dies, after much suffering. This has been improperly called cancer. It admits of no cure, except by very early extirpation. Every operation that I have seen has been too long delayed, and the patients have all had a relapse.

* If the ophthalmia resist local application, it will be useful to give the child small doses of calomel.

SECTION FOURTEENTH.

Scrofula is dependent on a peculiarity of constitution, derived at conception. This is often marked by a very fine skin, light hair, large blue eyes, with dull sclerotica, and delicate complexion. Others have the skin darker, or of a rough dirty appearance, the hair is dark, the upper lip tumid, and the countenance sallow, and sometimes swelled. When the scrofulous constitution is not strongly marked, the person may pass through life without any inconvenience. But when it exists in force, different parts of the body are apt, without any evident cause, to have their action deranged; their structure is changed, and then inflammation slowly takes place. The glands are most frequently affected, but the joints or viscera may also suffer. I do not think it necessary to describe these changes, especially as I have elsewhere entered pretty fully into this subject. I shall merely state what ought to be done as a preventive, or as a cure. In the first view, we advise whatever can strengthen the system, and preserve the different parts vigorous and in health; such as the cold bath daily, gentle friction over the whole surface for half an hour every evening, regular exercise in the open air, great attention to cleanliness, an open state of the bowels, and good nourishing diet, with a small proportion of wine. Animal food is much recommended. Sea-bathing is useful. When the glands are swelled, or other parts are enlarged, it is of service to rub them gently with oil for half an hour three times a-day, and apply, in the intervals, pledgits dipped in a solution of cerussa acetata. Electricity or galvanism is sometimes of service. When the tumors tend to suppurate, that process should be assisted by poultices and electricity; and when the abscess opens, stimulants are proper. The constitution is to be treated in the way already mentioned. Muriate of lime, or barytes, cicuta, bark, and great variety of medicines, have been advised, but I do not know that any one can be depended on. Medicines are chiefly useful to obviate existing symptoms, such as costiveness, &c.

Diseases of the joints and spine are to be managed chiefly by issues.

SECTION FIFTEENTH.

The disease called rickets is characterised by flabby muscles, relaxed skin, sallow or bloated countenance, debility, listlessness, and softening of the bones, so that the long bones become more or less curved, and their extremities enlarge. The ankles and wrists swell first, then the back changes its shape, and the breast protrudes. The bones of the pelvis approach more nearly together, the sacrum coming forward. The head is increased in size, and the belly likewise becomes large and hard. The appetite and digestion are impaired, the bowels are bound, or fætid stools are passed. The pulse is weak and frequent. The teeth are late of appearing, and are not good. The mind is often prematurely advanced. This disease may prove fatal, by ending in water of the head, convulsions, or hectic fever; but it often is cured spontaneously, or with assistance. It usually attacks betwixt the sixth month and second year, but it has been known to affect even the fœtus in utero. It is to be treated by a course of laxatives, to bring the bowels into a proper state, the cold bath, regular exercise, nourishing diet of animal food, general friction over the body, chalybeate medicines, and warm clothing.

 CHAPTER III.
Of Dentition.

THE formation of the teeth is begun long before the fœtus leaves the uterus. It is carried on slowly, and is not completed for several months after birth. The parts concerned in this process, are the jaw, the gum, and the soft rudiments of the tooth itself. The jaw, at first, has only a channel running along its surface; but this afterwards is divided by transverse septa, into separate cells, which are the origins of the alveolar processes. In each of these is lodged a membra-

nous bag, containing a soft pulp. The bag consists of two lamina, both of which, especially the outer one, are vascular. These sacs adhere firmly to the gum, so that if it be pulled away from the jaw, the sacs come with it; the pulp is also vascular, and assumes nearly the size and shape, which the body of the tooth is to have when ossification has commenced. The tooth consists of two parts, bony matter, and cortex striatus, or crystallized enamel, covering the bone. The bone is formed on the pulp, which gradually ossifies; and in the eighth or ninth month of the fetal life, all the pulps have begun to ossify, and at birth the shell is considerably advanced. Soon after the process begins, the inner surface of the sac deposits a soft earthy substance, which crystallizes and forms enamel. When ossification is advanced so far as to form the shell of the body of the tooth, the lower part becomes contracted, so as to form the neck; and as the shell thickens, the pulp, though diminished in quantity, protrudes through the neck, forming a kind of stalk or mould for the fang. If the tooth is to have two fangs, then a septum is stretched across the cavity of the neck, and the pulp protrudes in two divisions. As ossification advances on the root, the body rises in the socket, and the sack rises with it; but in proportion as the enamel is crystallized, the sac becomes less vascular and thinner, and at last is absorbed; and when the tooth has acquired its proper height, the whole membrane is destroyed. Thus it appears, that the sac is not stretched, and burst by distension, but is absorbed, and being fixed to the neck of the tooth, and not to the jaw, it rises with the tooth.

There are only twenty teeth evolved in infancy, ten in each jaw, and these are not permanent. They are shed, to give place to others more durable and more numerous, as the jaws are longer in the adult. The permanent teeth begin to be formed even before birth. Like the fang of the tooth, they are set off from the body of the temporary tooth. A small process or sac is sent off backwards. This is lodged at the back part of the socket, where a little niche is first formed for its reception, and then a distinct socket. Hence the

temporary and permanent teeth are connected together, and this connexion remains for a considerable time. In the fœtus, there are, besides the temporary teeth, the rudiments of the two first permanent grinders, therefore there are twelve sacs in each jaw. The sac of the anterior permanent grinder sends, when the jaw lengthens, a process backward, to form the next grinder; and it again, in course of time, sends off the third grinder.

Generally teeth cut the gum, about the sixth or eighth month after birth. The two middle incisors of the lower jaw first appear, and in about a month those of the upper jaw come through. Then the two lateral incisors of the lower jaw, and next those of the upper one, appear. About the twelfth or fourteenth month, the anterior grinders of the lower, and soon those of the upper jaw, cut the gum. Between the sixteenth and twentieth month, the cuspidati appear; and from that period to the thirtieth month, the posterior grinders come through; so that the child, when about two years and a half old, usually has all the first set of teeth. These continue till the sixth or seventh year; and as the permanent teeth are in progress all this time, we find, besides the twenty teeth which are visible, twenty-eight below the gums. At this time, the two first permanent grinders appear at the back part of the jaw, and the middle incisors of the lower jaw loosen and drop out; and by degrees, all the milk teeth give place to others which are larger, stronger, and better adapted to the increased size of the jaws. In this curious process, which strongly displays the wisdom of God, we are early taught the perishable nature of our frame. But it is also a pleasing reflection, that dissolution is succeeded by a state of greater perfection.

Many children cut their teeth with great ease and regularity, but some suffer considerably. It is usual for the child to have some irritation of the mouth during dentition. The gums are hot and itchy, and somewhat swelled or full over the tooth, and the anterior edge is not sharp as formerly, but is rounded, and the investing membranes unfolded. The secretion of saliva is increased; and the stomach and bowels

sometimes are rendered irritable. The symptoms seldom continue urgent above ten days at a time. If the child be very irritable, and the tooth advances fast, or several teeth come forward at the same time, very unpleasant effects may be produced, such as severe bowel complaints, or fever, or convulsions; or the skin is affected, an eruption appearing on different parts, which is a much more trifling effect than any of the former. When the first grinders and cuspidati are cutting, and come forward quickly, there is great danger, for there are then, as Mr. Fox observes, eight teeth making pressure on the gums. Whenever dentition is attended with troublesome symptoms, the proper practice is to cut the gum over that tooth which is farthest advanced. The incision should be made on the anterior part of the gum, to prevent the connecting membrane between the first and second set of teeth from being divided. Besides this, the child should be kept cool, and we are to employ laxatives, narcotics, and such remedies as existing symptoms naturally require for their removal, and which will be noticed in the progress of this work.

It is customary to give children gum-sticks during dentition; but these, if hard, bruise the gum, and sometimes the child drives them into his eyes. A crust of bread is employed by many; but if a piece of it loosen in the mouth, the child may be choked. The fingers are instinctively used, and serve every necessary purpose, nor is there any risk of the child acquiring a habit of sucking them.*

* The treatment of fever, diarrhœa, ophthalmia, sore ears, convulsions, spasmodic affections, cough, &c. must be conducted on the general principles mentioned in the progress of this work.

In every case of troublesome dentition, we have two views to attend to, first, to allay irritation, and second, to support the strength. The first is accomplished by cutting the gum, preserving the bowels in an open state, using opiates internally or externally, keeping the child much in the cool air, and putting him in the cold bath every morning; or, if he be very restless, using the warm bath at night. The second is fulfilled by giving light nourishing diet, such as the breast milk, arrow root, beef tea, &c. and indirectly by restraining immoderate evacuations.

Delica e

CHAPTER IV.

Of Cutaneous Diseases.

IN the following short account of cutaneous diseases, I may perhaps have committed some errors respecting the names of eruptions. Nosological writers, unfortunately, do not agree in giving uniformly the same name to the same disease; and perhaps it is not always easy to give a perfect definition by words alone. I have, however, endeavoured to detail faithfully, so far as I was able, the symptoms characterising the eruptions which I describe, by whatever name they may be called, and also to point out the mode of treatment commonly employed.

SECTION FIRST.

The first eruption which I shall mention, is well known under the name of red gum, and is described very accurately by Dr. Willan, as his first variety of strophulus, a papulous eruption. The strophulus intertrinctus, or red gum, consists of a number of acuminate elevations of the cuticle, of a vivid red colour, not in general confluent, and sometimes even pretty distant from each other. The papulæ are surrounded with a red base. This redness is often the most evident part of the eruption in very young infants, and the disease much resembles measles. It covers a great part of the trunk, and keeps almost entirely off the face. In the centre of the spot, we may observe a very minute elevation or papula, with a clear top. There is no fever, nor has the child any catarrhal symptoms. The eruption comes out irregu-

Delicate slender children, often suffer much from diarrhœa, which must be carefully attended to. Lusty, full children, frequently have smart fever with drowsiness, &c. requiring the application of one or more leeches to the temples, and smart purges. It is unfortunate when the child has been weaned, shortly before disease from teething takes place. It is sometimes useful to renew the nursing.

Spasmodic affections require the warm bath, calomel, assafœtida, and cutting the gums.

larly, and is either more durable, more fugacious, or more partial, than the measles. On the feet, the papulæ are still more distinct. The papulæ of strophulus are often intermixed with small red specks, not elevated above the surface. They are hard, and contain no fluid, or only a very small quantity under the cuticle at the apex, giving it a glistening appearance; but they seldom discharge any fluid, and scarcely ever form pus. This eruption appears generally on the face and superior extremities, but sometimes it spreads universally over the body. On the back part of the hand, the papulæ occasionally contain a little yellow serum, but this is presently absorbed, and the cuticle is thrown off like a slight scurf. This variety of strophulus generally appears during the first ten weeks* of life, and is not productive of any inconvenience. It seems to be connected with the state of the stomach and bowels; and any uneasiness the child may suffer during the continuance of the eruption, or previous to its appearance, seems referable to this source. The particular connexion existing betwixt the chylopoetic viscera, and the surface, I do not pretend here to explain or investigate. I hold the fact to be established, and from no circumstances more decidedly than these, viz. that in adults, certain kinds of food do, with individuals, invariably produce an eruption on the surface; and that in children, where all the system is much more irritable, trifling irritation of the bowels is followed by cuticular eruptions, whilst the sudden disappearance of the eruption, on the other hand, is succeeded generally by sickness and visceral disorder. I am inclined to attribute to a cause within the abdomen, all those eruptions which are not produced by the direct application of irritations to the surface.† The affection at present under consideration requires no particular remedies. It is suffi-

* Sometimes a few spots of this kind may be observed on the forehead of children at the time of birth.

† Dr. Underwood is inclined to think, that when children are subject to repeated eruptions, the milk does not agree with the stomach, and ought to be changed. I am very much disposed to adopt his opinion.—See also Turner on Diseases of the Skin, p. 69.

cient to avoid the application of cold, which might suddenly repel the eruption; and filth, or other irritation, which might increase it, or superinduce another affection. Should the stomach or bowels be affected, or the child oppressed, a very gentle laxative may be occasionally administered; or, should the bowels be too open, and the child flabby, a little tincture of myrrh, or myrrh with lime water, may be given, and, if necessary, an opiate. If the eruption be repelled, and the child thereafter be disordered, the warm bath, with a gentle laxative, will be proper.

SECTION SECOND.

The next variety is the *strophulus albidus*, which is an eruption consisting of minute whitish specks, hard, and a little elevated; sometimes, but not always, surrounded by a very slight and narrow border of redness. No fluid is contained in the papulæ, which appear chiefly on the face, neck, and breast. This generally is met with after the period at which children are subject to red gum; it remains rather longer, but requires no peculiarity of treatment. Sometimes children, at a more advanced period, have this kind of eruption on the neck, which is exposed to the sun in warm weather.

SECTION THIRD.

The *scrophulus confertus* is a very frequent affection during dentition, but seldom appears before that period, though it may continue after it. It consists of papulæ, often set extremely close together, forming patches, varying from the size of a sixpence to a dollar. Such, at least, is the appearance on the face and arms, to which part it is often confined, especially to the former. But it sometimes appears on the trunk, and there the papulæ are larger, flatter, and surrounded with more inflammation, than those on the face or arms, looking at a distance like measles. This eruption not only varies a little, according as it appears on the trunk or extremities, but also according to the age of the child. For

after the seventh month, we find, especially on the arms, the papulæ pretty large; and either red, with scarcely any appearance of lymph at the top, or of a light yellow colour, but the base surrounded with a halo or inflamed rim. These papulæ may on some parts be distinct from each other, whilst elsewhere they form clusters so close, that the redness surrounding one communicates with that of another, forming altogether a large inflamed ground-work. In some cases, the red patch is the prominent feature; it may be as large as a dollar, with innumerable little dots within it like pin heads, with clear or watery-looking tops, or larger red hard papulæ. This eruption is sometimes preceded by sickness, and, in certain circumstances, has been mistaken for measles; but it is attended with little or no fever, and has none of the catarrhal symptoms met with in measles. By not attending to the characters of the two diseases, they may be confounded; and not unfrequently, when young children take measles, the strophulus confertus appears on the arms, previous to the proper eruption, or even along with it. Dr. Underwood says this eruption does not dry off the measles; but as Dr. Willan remarks, it often does terminate with a slight exfoliation of the cuticles. A variety of this disease appears like red patches in different parts of the body, particularly on the arm, and often coming out in succession. They are as large as a split pea, and a very little raised toward the centre. By near examination, several small papulæ may be discovered, which are something like vesicular points. In three or four days, the patches become yellowish or brown, and covered with small scurf. This is denominated by Dr. Willan, *strophulus volaticus*, and is said not to be very common, but I think it is frequently met with. It is seldom necessary to give any medicine for this complaint. If, however, it be troublesome, it is usual to prescribe gentle laxatives, and testaceous powders. Some advise emetics, and the use of the bark; but neither, I believe, are in general necessary.

SECTION FOURTH.

Strophulus candidus consists of papulæ having a smooth shining surface, which appears of a paler colour than the rest of the skin, and the base is not surrounded by any inflammation. It is described by Dr. Underwood as resembling itch, but it is neither red nor itchy. It generally either attends dentition, or succeeds some acute disease of children, and is justly considered as a very favourable symptom. It is most frequently met with on the trunk of the body, the arms, or forehead. In a few days the papulæ die away. No particular treatment is necessary.

SECTION FIFTH.

A different eruption from any of the foregoing, is the lichen, a term restricted, by Dr. Willan, in his elaborate work, to a papulous eruption, chiefly affecting adults. It may, however, appear also in children; and I have seen it succeed some of their febrile diseases, as, for instance, measles. It consists of numerous distinct papulæ, some of which are pale at the top, but very slightly red at the base; these are generally small like pin heads. Others are larger and flatter, and more inflamed, but have always at first a clear apex, and do not end in ulceration, but die away in slight scurf. Sometimes on the body, there are small shining or silvery looking patches, from exfoliation of the cuticle; or the skin may peel off more extensively, as if it had been blistered. They resemble often the papulæ in *strophulus*, but seldom form in clusters, and have not, in general, any diffused redness connecting one papulæ to another. There is, however, sometimes about the joints or fore-arm, a considerable degree of red efflorescence, covered with scurf. This eruption may be produced by exposure to heat, and by drinking cold water when heated, or other less obvious causes. It is frequent in warm weather, and a species of this is known under the name of prickly heat. It is preceded often by febrile symptoms, and the eruption itself may last for more

than a fortnight, but in a few cases it goes off in a day or two. These papulæ, at different stages, bear a resemblance to two very dissimilar diseases, the itch and the measles; but it is not pustular like the itch, neither does it ulcerate; it is not very itchy, and if scratched so as to take off the top, it does not yield matter, but a little bloody scab is formed. It differs from the measles in being papulous, and having on the spots, before they form slight scurf, a clear looking top; it in general, lasts longer than the measles and is not attended with catarrh. Farther, it is sometimes accompanied with a broad scurfy efflorescence, about the elbow joint, or other flexures. A suitable dose of calomel is the best remedy, or, should the patient be oppressed, an emetic and saline mixture may be given. When there is no febrile affection, it will be sufficient to keep the surface clean by means of the tepid bath.

SECTION SIXTH.

Intertrigo is a kind of erythematic affection of those parts of the body where the skin forms folds or sinuosities, as, for instance, the joints of fat children. It also is very common about the nates and inside of the thighs, in consequence of the urine fretting these parts. The inflamed surface ought to be washed occasionally with tepid milk and water, and the child should never be allowed to remain wet, but ought to be bathed, and gently dried after making water, when the thighs are affected. Afterwards the parts are to be dusted with some cool powder, such as tutty, white lead, levigated flowers of zinc, &c. It is not usual for intertrigo, to end in gangrene or suppuration, but sometimes the form of the disease changes, the cellular substance inflames, and either of these terminations may take place, and will require the usual treatment.

SECTION SEVENTH.

Crusta lactea, or milk blotch, is a scabby eruption, which appears generally first on the cheeks or forehead, and then extends over a considerable part of the face, and even the

scalp. This disease belongs to the *achores*, or pustules containing a fluid something like honey. The pustules are red, and the top soon becomes covered with a laminated scab. Sometimes the pustules are large and distinct, but often small and confluent, so as to form a considerable patch.* A succession of pustules may appear on the same place. They are not in general painful, but are occasionally itchy, especially at night. In some cases, the eruption spreads to the neck, breast, arms, and legs. Strack remarks, that in this disease the urine has a particular smell, like that of a cat. Lory describes a variety of this disease, under the name of *ignis sylvestris* or *volaticus*; and says it goes off in blisters or thin crusts, without any inconvenience, except a degree of itching.† He remarks, that it may attend the cutting of every tooth, and may even continue for years, but this circumstance I have not met with. He has observed, that when the glands of the neck swell, the eruption goes off, and when they subside, the eruption returns. This is a disorder which is often met with when the child is on the breast. It has been attributed to the richness of the milk, and generally goes off after one or two teeth have made their appearance.‡ It is not attended with any danger, scarcely with inconvenience, and never leaves any mark or scar behind it. But having been sometimes, at an early stage, mistaken for syphilitic blotches, it has caused much unnecessary alarm. With respect to the treatment, very little is necessary, except keeping the bowels open. In general, strong local applications are improper; but if any particular part is very sore, a little weak solution of

* “*Incipit a vesiculis numerosis cohaerentibus, oleoso succo turgidis.*” Plenk. 71.

† The *ignis sylvestris* is sometimes accompanied with considerable inflammation round the small pustules on the face, which are intermixed with herpetic spots and vesicles. This affection is very itchy. It is cured by bathing the parts frequently with lemon juice, or applying an ointment containing camphor and sulphur. An eruption of *papulæ* like *prurigo*, or of small vesicles with inflamed margins, sometimes appears at the same time on the arms, and requires similar applications.

‡ Some have considered this as a *scrofulous* disease. Vide Stoll *Prelectiones*.—Frank de Morb. Curand, &c.

acetate of lead may be safely applied for a short time. In obstinate cases, sulphur vivum ointment has been found serviceable. Dr. Armstrong advises the lac sulphuris, in such doses as keep the bowels open, and Dr. Underwood recommends Harrowgate water; both of which will be found of benefit. Stoll proposes, after Strack, a decoction of the *viola tricolor* in milk, to be taken internally. Frank observes, *externis hac in tinea remediis vix locus est, quæ illam excicant, cum damno admoventur.*

SECTION EIGHTH.

During dentition, or in consequence of affections of the bowels, different anomalous eruptions may appear, which are not distinctly referable to any well defined species. Sometimes we find upon the arm, one, two, or three inflamed portions of the skin, something like small-pox, but rather larger, with a small acuminate speck of lymph beneath the cuticle at the apex, or sometimes the top is flattened and shrivelled. Occasionally, a greater number of pustules appear on the body, pretty large, hard and inflamed round the base, with a white top. This kind of eruption is not attended with fever, and is neither painful nor itchy; it goes off in a few days without any medicine.

In general, it should be a rule in the treatment of eruptions, to wash the surface, once a-day at least, with tepid water, and keep the bowels open. In obstinate cases, preparations of sulphur, antimony, calomel, and arsenic, have been employed; but the last is too dangerous to be admitted into practice. Sometimes the juice of the *sium aquaticum*, in considerable doses, or the decoction of the woods, will be of service; and in indolent eruptions, the tincture of cantharides has been beneficial. As external applications, the decoction of hellebore, or stavesacre, infusion of tobacco, as a partial lotion to the part, sulphureous baths and lotions,* sulphur ointment, ung. acid. nitros. ointment of nitrated mercury, or

* Diluted hepatised ammonia, but especially solutions of the sulphuret of lime or potash, may be employed for this purpose.

weak solution of corrosive sublimate, or of acetate of lead or camphorated liniment, or the application of cloths wet with buttermilk, are employed, sometimes with benefit. Sea bathing is frequently of service, and a bath of warm sea-water often does great good.

SECTION NINTH.

Authors describe some other eruptive diseases, which may be noticed here with propriety: one of these, called pompholyx, consists of a number of vesications of different sizes, appearing on the belly, ribs, and thighs, and containing a sharp lymph; they may appear during teething, or in bowel complaints, and continue for several days. These vesications are not uncommon in very warm weather; and I think boys are most subject to them, especially about the ankles, if they do not wear stockings. Lory considers this disease as a kind of erysipelatous affection, produced by the heat of the sun. It requires no medicine, but the lymph ought to be let out by a small puncture.

A similar appearance, attended with fever, is more serious, and is called pemphigus infantilis. The vesicles, at first small, soon become pretty large and oval, and their contents become turgid. They appear soon after birth, generally in emaciated infants, affect both the trunk and extremities, are surrounded with a livid inflamed halo, and, when broken, are succeeded by spreading ulceration. Notwithstanding bark and cordials, the fever and irritation generally prove fatal in about a week; and only those children are saved, who were previously possessed of a tolerable degree of strength.

Another kind of eruption attacks children above two years of age, suddenly covering the greater part of the body. It consists of red elevated spots, at first sight, something like a kind of pock. The spots are distinct and most numerous on the thighs and legs. They are of a dark red colour, pretty flat, with a smooth flatted vesicular top, which is dry, and does not burst, nor discharge matter, but gradually dries and desquamates. The eruption is scarcely painful or itchy, and is not attended with fever. It may continue for four or five

weeks, and is sometimes combined with lichen, or other cutaneous diseases. The bowels should be kept open, and some advise antimonial wine to be given, with a little tincture of cantharides.

SECTION TENTH.

Sennertus describes, under the name of sudamina, an eruption like millet seed, fretting the skin, and affecting children about the neck, arms, &c. Plenck defines it in the following terms. *Sunt vesiculæ granis milii magnitudine et formâ similis, subito absque febre erumpentes.* The child should be bathed occasionally in tepid water. This eruption often takes place in hot weather. A similar eruption attended with fever, is also met with, which I find very well described by Dr. Willan, in his reports on the diseases of London, under the name of acute miliaris. It does not affect infants, but children old enough to take active amusement. It begins with a febrile attack, attended with head-ach and pain in the back. The tongue is of a dark red colour at the edges, with the papillæ prominent as in scarlatina; the rest of the tongue is covered with white fur. The pulse is small and frequent. Presently the patient complains of heat and pricking at the surface, is sick at stomach, and perspires freely through the night. At a period varying from the third to the sixth day of the fever, an eruption appears, of small pustules like millet seeds. These are of a red colour, but contain at the top a white lymph, and are either diffused over the body, or collected in patches on different parts, especially the back and breast; they may alternately appear and disappear, and though the same pustule does not continue long, it may be speedily replaced. They may sometimes be combined with small red efflorescences, and generally vesicles appear on the tongue and fauces, ending in aphthous ulceration. The complaint often terminates in about ten days, but it may be prolonged even to twenty. It is frequently the consequence of being over heated, or drinking cold water, in that state. It requires first of all an emetic, and then a purgative. During the course

of the disease, the patient should be kept moderately cool, and use acidulated drinks freely.

SECTION ELEVENTH.

Itchy eruptions are frequently met with on children, but these are not always the true itch, nor the consequence of infection. The *prurigo mitis*, described and delineated very accurately by Dr. Willan, is a disease often met with in spring. It appears without any previous indisposition, and consists of soft smooth elevations of the skin, or papulæ, differing in colour very little from the surrounding integuments. When they do become red, it is in consequence of friction. If the top be rubbed off, a clear lymph oozes out, which forms a thin scab, of a dark or almost black colour. The eruption is itchy, especially on going to bed, and if scratched, it may become pustular and contagious, which it is not in its early stage. At first, it may be removed, by washing frequently with tepid water and a little soap and lemon juice; but if neglected, it requires the application of sulphur.

A variety of this disease consists of minute red acuminate papulæ, with a very small vesicle at the top, terminating not in suppuration, but yielding, when scratched, only a little clear serum. Sulphureous preparations give relief, and time, with attention to cleanliness, confirms the cure. Sometimes very little itching attends this eruption, and it disappears by using the tepid bath.

SECTION TWELFTH.

The scabies,* or true itch, is contagious, and consists of small pustules, which have a hard hot base, with a watery looking top. They are attended with an intolerable desire to scratch, in consequence of which, the tops are rubbed off the pustules, and scabs come to be formed, partly by blood, and

* Children, in consequence of handling mangy dogs or kittens, are sometimes affected with an obstinate itchy eruption, which is not scabies, but may be cured by the remedies used for the itch.

partly by a kind of matter, furnished by the little ulcers. But if the pustules be not disturbed, but removed by proper applications, they end in a slight desquamation of the cuticle, "*quæ vix furfur aliquod ostendat.*" The itch first appears betwixt the fingers, on the wrists and hams, but if neglected, it may spread over the whole trunk and extremities, and, in consequence of the continual irritation, impairs the health, nay some children die in consequence of it. In neglected cases, the inflammation surrounding one pustule spreads to another, and the part becomes universally red, with pustules or scabs, according to circumstances, scattered over it. This is often the case on the back of the hand, and fore-part of the feet. Sometimes small boils and phymata appear in the course of the disease, on the thighs or body, or about the face. The cure may generally be accomplished, by frequent ablution, and rubbing the parts affected with sulphur ointment,* which, in obstinate cases, may be rendered more effectual by the addition of powdered hellebore. Rosenstein says, tht the hands are very soon cleared, by washing them with a strong decoction of juniper berries; and that when the eruption is great, as, for instance, on the feet, he has applied cabbage leaves with advantage. They cause at first a great discharge, but the parts heal afterwards.

Sometimes the friction excites an eruption different from itch, and kept up by the remedies intended to cure it. M. Burdin remarks respecting this, that it consists of small round pustules, "*qui se remplissent quelquefois de scrosité, et dont la cicatrice laisse le plus souvent une tache d'un rouge brun, le prurit qu'elle occasione est aussi moins fort que celui de la gale.*" In inveterate cases, the use of the Harrowgate water is of great benefit. In order to avoid the smell of sulphur, other applications† have been employed, such as sul-

* Dr. Joseph Clark considers it as dangerous to use sulphur ointment with infants, lest the eruption be suddenly repelled; and advises rather to boil a piece of stick brimstone in water, in order to make a bath.

† M. Becu advises the following lotion. Take of tobacco leaves two pounds, sal ammoniac one ounce, ammonia two ounces, water three Paris pints. Infuse for two hours.

phuric acid, or nitrous acid combined with hog's lard, ointment of nitrated mercury, camphorated ointment, hellebore mixed with hog's lard, &c. These often fail, and even when they do remove the eruption, the cure is said frequently not to be permanent. Itch may be combined with other diseases, such as herpes, syphilis, &c. in which cases, it is more obstinate than usual, and may sometimes require the use of mercury.

SECTION THIRTEENTH.

Herpes has been divided into different species. It has been described under a variety of names, and sometimes confounded with lichen, or its different appearances described under the name of impetigo. Strictly speaking, the eruption in herpes is vesicular, the base surrounded with erysipelatous redness, the top terminating in a thin scab or scale, and the vesicles in general small and confluent, and disposed to spread. But some diseases which consist rather of small pustules than vesicles, and others which have neither vesicle nor pustule, have been admitted as species of herpes. Plenck and others have described a great number of species; but we may be satisfied with enumerating the following, though, in strict nosology, they are not all referable to the same genus. 1st. The herpes farinosus, dartres farineuses, or dry tetter. This consists of efflorescent patches of various sizes, covered with scurf or small scales. The patches appear like flat red and slightly elevated portions of the skin, having a distant resemblance to the blanes of the small-pox about the twentieth day of the eruption, but darker in colour, and very soon covered with scurf, through the interstices of which the surface is seen to be red. The shape is irregular, and the size generally varies from that of a small split pea to that of a shilling. These spots usually begin like small pimples, slightly raised, with a very small vesicle at the top. They gradually extend into flat dark red spots, covered with slight scurf. Sometimes there are many small vesicles near each other, which contribute to the formation of these patches. They are not painful, but itchy. The patches may be very few, or may be numerous, coming

out on great part of the surface, but especially on the extremities and face, sometimes on the trunk, and about the arms. They are also to be met with on the soles of the feet. When the scurf falls off, the skin below, as Pinel observes, is generally sound, but continues discoloured for a length of time; and often the scurf is renewed, or new patches come out in other places. Sometimes, however, the parts become excoriated, and even fissures may take place, or the cuticular lines become more distinct, without excoriation. In consequence of excoriation, or from scratching, a fluid exudes, which forms rough irregular scabs of a yellowish colour, scattered over a pretty extensive portion of red skin, which is dry but not smooth. Sometimes in the vicinity of this, we may observe a thick cluster, apparently of white papulæ, giving the skin a dirty white rough appearance. These, however, are vesicles, containing a very limpid fluid. Their base is white and hard. In young children, the nostrils are apt to become obstructed; and when the upper part of the face is much affected, the eye-brows and eye-lashes fall off. It requires considerable attention, in many cases, to distinguish this disease from syphilis. In some instances, especially in spring and summer, a variety of this is met with, the characteristic of which is, that the spots are smaller, and come out suddenly, and are occasionally preceded by slight fever. They are of a red colour, inclined to yellow, have little scurf, and continue for some time after the scurf falls off. This is sometimes combined with intertrigo and strophulus. Another form met with, frequently in adults, but seldom in children, is an universal affection of the extremities, and sometimes of the trunk also; the skin being covered with small scales, or scurfs, which are found in considerable quantity in the bed in the morning.

2d. *Herpes miliaris*,* ring-worm, wild-fire, which, when it

* Some have ranked under this the phyma and ecthyma, but these are inflamed pustules. Others, with more propriety, have included the eczema, or eruption of small vesicles, with inflammation, produced in summer by the rays of the sun. The larger vesicle, called pompholyx, is different. In these eruptions, a liniment, composed of sweet almonds and hog's lard,

appears on the lips, has been called exanthema or herpes labialis. This consists of minute pimples, or vesicles like millet seeds, which are confluent, appearing in clusters, or sometimes like rings. They contain a lymph of a glutinous nature, which exudes, and forms rough yellow scabs; and from the quantity of the fluid, the linen is very apt to stick to the part. When the scab falls† off, it is apt to be renewed, or still more frequently the disorder spreads in a kind of circling direction. These rings or clusters may become very numerous, and sometimes invade pretty quickly; so that Lory is disposed to rank this among acute diseases. The parts are generally very itchy. This disease is not always confined to the surface, but may also attack the throat. In this case, the local symptoms are preceded by fever for a day or two, and then vesicles appear on the fauces, which are soon followed by a herpetic eruption about the mouth and inside of the lips. The internal affection ends in slight ulceration, the external in the formation of scabs, and the complaint is removed in about a week. If not known, it is mistaken for a more malignant disease. Dr. Willan has described this under the name of *angina herpetica*.

Another species of herpes appears on different parts of the body, but especially on the face. It consists of a pretty large portion of inflamed skin, covered with different broad thin scales, which, when removed, are soon replaced. This is described as being a variety of *ignis sacer*. It is not so common with children, as in women, and it is very obstinate.

3d. The phagedenic herpes, or herpes exedens, differs from the former species, in ulcerating and destroying the skin, sometimes spreading along the surface, sometimes penetrating deep. It generally begins with small painful pustules, or phlyctænæ, with dark erysipelatous margins, which discharge sharp matter, run together, are hot and itchy, and seem to eat away the skin, forming an ulcer called *noma*.

has been found useful. Sometimes heat, or other causes, produce a different kind of eruption, already described under the name of lichen.

† If the scab be forcibly picked off, the part below is found raw and glossy, without apparent granulation.

When the herpes farinosus is confined to a small part of the body, it will in general be sufficient to apply frequently to the spot a little of the ung. hyd. nit. or ung. acid. nitros.* Should the spots resist this application, it may be useful to touch them with a weak solution of nitrated silver, or a strong solution of muriate of mercury, or lime water, and afterwards apply the ointment. If the herpes be extensive and obstinate, internal remedies are sometimes necessary, such as decoction of sarsaparilla, with a little antimonial wine; or Stoll advises cow's milk whey, with the juice of nasturtium. In all such cases, the daily use of the warm bath, succeeded by gentle friction with a dry cloth, will be highly proper. In obstinate cases, sulphureous baths are beneficial. In sudden eruption of herpetic spots, if attended with any slight degree of fever or sickness, an emetic, followed by gentle doses of calomel, will be of service.

The herpes miliaris, like the former, is often cured by the ointment of nitrated mercury, or by being bathed with water containing a small quantity of nitrous acid. When extensive and obstinate, sudorific decoctions may be required, and stimulating or astringent local applications, such as ointment of red nitrated mercury, lime-water containing muriate of mercury, or solutions of the sulphate of zinc, or acetate of lead. Sometimes it is necessary, by fomentations or poultices, to loosen and remove the scabs, previous to making these applications. Calomel is useful.

The spreading herpetic ulcer generally requires strong stimulants, such as caustic, butter of antimony, camphorated spirit of wine, resinous ointment, ol. terebinthinæ, &c. If, however, the ulceration be very superficial, an ointment, containing white calx of lead, or calx of zinc, is often of service; and sometimes the spreading may be stopped by cauterizing a narrow rim of skin round the ulcer. The internal use of

* Frank recommends the tobacco cerate, for which he gives the following receipt. \mathcal{R} succi nicotianæ, ceræ flavæ, a \mathfrak{z} iii; resinæ pini, \mathfrak{z} iss; terebinth. \mathfrak{z} ss; ol. myrrhæ, q. s. fiat ceratum. De Morb. Cur. tom. IV. p. 154.
—With children this must be used cautiously.

nitrous acid may likewise, in this kind of herpes, be made trial of.

SECTION FOURTEENTH.

Children are sometimes affected with ichthiosis, a disease in which the skin becomes dry, and covered with scales, resembling in their distribution, and sometimes in their appearance, those of a fish. This disease may come on at any period of life; it may even be connate, but this is very rare. It is proper to employ the warm bath, and during its use, to pick off the scales. Their regeneration is to be prevented by friction, and repeated bathing. Sometimes children have this disease conjoined with boils.

SECTION FIFTEENTH.

The scaly tetter, dry itch, or psoriasis of Dr Willan, consists of red rough spots, which are very soon covered with a laminated scale, sometimes as thick as paper, but generally thin, and very like a bit of the scale of a herring dried. They are irregular in their shape and size, occasionally not larger than a coriander seed; sometimes as large as the nail of the little finger, resembling a dried fish scale pasted on the skin; and frequently they are interspersed with shining silvery looking portions of the surface. These scales are formed by the exudation of a whitish matter, which is very glutinous, and, as Sylvius observes, stiffens the linen, when it happens to exude in sufficient quantity. The spots on children generally begin like papulæ, of small size, and vesicular at the top. These end sometimes in scurf, oftener in thin scales, as has been described. On the back of the hand, the vesicles are sometimes pretty large; whilst in the palm of the hand, the eruption is rather pustular, and ends in broad thin rough scabs of a yellow colour. In the early stage, it is sometimes combined with strophulus. The parts are itchy, but when they are scratched, matter does not come out by the removal of the scales, but a little blood flows. This eruption often begins on the face or neck, and spreads to the body and ex-

tremities. It is very obstinate, and sometimes destroys the nails. When it has continued for some time, the skin, especially about the hands and feet, is found to be universally red, with dark-coloured scales interspersed. The skin looks as if it had been scalded, and partly covered with thin scabs or scales in different degrees of adhesion; and in some cases, the whole of the extremities, and even the body itself, or the head, becomes red, partially excoriated, and covered partly with scales and scurf, and partly with scabs which are yellow, and pretty thickly set, often loose and easily detached. Sometimes on different parts of the body, particularly on the arms or legs, there are many soft red indolent bumps, more especially if the child have been seized with this disease soon after the small-pox or chicken-pox. The appearance on the head is nearly the same as in pityriasis, but it in general wants the white scurf. It is rare not to find the head affected in this disease.

Excoriation sometimes also takes place about the anus, with a slightly elevated state of the surface; in consequence of which, and the disease of the skin taking place soon after birth, I have been consulted respecting children given out to nurse, who were apprehended to have syphilis. Dr. Willan remarks the syphilitic appearance of this disease, but justly observes, that all other marks are absent. The syphilitic form of this disease is attended with hoarseness, and the patches are of a livid colour, with a slighter degree of scaliness, and the margin is sometimes higher than the centre.

It is not, like the itch, very contagious, nor is it easy to say what occasions it; but we know, that inattention to cleanliness is favourable to its production. The application of preparations of sulphur, and ointment of nitrated mercury, with the use of the tepid bath, especially made with sea-water, daily, will often cure this disease; but in obstinate cases, we must give some sudorific, such as antimonials, or decoction of sarsaparilla, alone or with calomel, or have recourse to the Harrowgate or Moffat waters, which have great efficacy. They should be used both externally and internally. Solutions of soap, or of alkali, or of sulphuret of potash, form

very useful baths. The application of cloths wet with buttermilk, or a poultice of buttermilk and oat-meal, sometimes facilitates the cure.

SECTION SIXTEENTH.

Impetigo is a term differently applied by writers, and hence uncertain in its meaning. By this term, I understand a disease, which consists of broad vesicles about the size of a split pea, circular in general, but with a shelving jagged margin. These are surrounded with diffused redness, and contain purulent looking matter. Sometimes the top is dark coloured, as if it were filled with bloody lymph, and the margins are of a livid red colour. Some are of an irregular shape; and the contained fluid being very small, the general appearance of the whole blotch, is livid. These vesicles are very numerous, especially on the extremities, and soon form crusts, or thin flat rough scabs, of a yellow colour, inclining sometimes to brown or red. The scab is surrounded by a diffused redness, of irregular shape; and this red portion of skin seems a little radiated or puckered, as if drawn toward the scab. This disease is attended with itchiness, and, if much scratched, the parts may be fretted and ulcerate. It is occasionally attended with a rough scaly appearance of the palm of the hand. Sulphureous preparations are useful, or the parts may be frequently bathed with solution of oxymuriate of mercury, or the ung. hyd. nit. may be applied. The tepid bath should be used, to promote cleanliness.

SECTION SEVENTEENTH.

The pityriasis is a disease known commonly under the name of the dandriff.* It consists of a dry, scurfy, and scaly eruption on the head, amongst the hairs. Near the forehead, the skin is covered with thick white scurf, which can be removed in a powdery form; farther back, larger scales are

* The pityriasis seems sometimes to be infectious. A variety of it appears like small red marks on the scalp. The circumference extends, and continues red, whilst the centre becomes pale and scaly. It is accompanied with falling off of the hair.

formed. This is cured, by cutting and shaving the hair, and brushing the head daily with a hard brush, and washing it with soap and water. If neglected, ulcers may form, and the disease be converted into the one next to be described.

SECTION EIGHTEENTH.

The porrigo is a collection of pustules, containing a yellowish coloured fluid, something in colour and consistence like honey, and ending in a white or yellow scab. The pustules are numerous, forming about the roots of the hair; they are itchy and contagious. They are not unfrequently accompanied with an eruption on the face, and other parts of the body, which has been taken for the itch; and indeed this disease has been called the scabies capitis. But the pustules are larger and more solitary than those of the itch, contain a straw-coloured thick fluid, and form crusts, which, especially on the hands, are flat and ragged, and resembling, in miniature, the scabs on the head. On the body there will be found many small pustules or pimples, with a red base and lymphatic top; and these also appear on the face, which is seldom the case in itch. Often about the back of the neck, the skin is very red, with small scabby pustules. Sometimes scabs form on the face, especially on the chin, similar to those on the head. Many rank the crusta lactea with porrigo, and consider both as scrofulous. It differs from the pityriasis or dry scab, in being pustular and humid. In order to cure this disease, it is useful to remove the hair. This has been proposed to be done, by pulling it out, by means of a pitch plaster; a method certainly effectual, but not very gentle. In mild cases, it will be sufficient to cut the hair very close, and apply a poultice or some emollient ointment, to loosen the scabs, and set free the hair. The head is then to be washed with soap and water, and as much of it shaved as can be done; and thus, by a repetition of the process, at the same time that proper applications are made, the whole head may at last be cleared. If, however, the disease be more ex-

tensive and obstinate, some depillatory* may be employed. For this purpose, a combination of the ung. picæ, and white hellebore, has been proposed, and is recommended by Dr. Underwood. It is to be rubbed warm upon the head, for near an hour at a time; and then a bladder is to be put over the scalp, to prevent the cap from sticking. After three or four applications, the scabs, and even the hairs, are loosened, and these are to be pulled out by degrees; after which, new hair will grow, without any scab at the bulb or root. Various applications have been proposed, whether the hair be or be not taken out. Some employ lotions,† others ointments. A very useful preparation is made, by combining the sulphur vivum, camphor, and oil of bays. The ung. picæ, and ung. hyd. nit. are also employed with advantage. Sulphur ointment with the addition of a little white precipitate of mercury, or the weak mercurial ointment, have been likewise found of service. In some obstinate cases, caustic, or cantharides ointment, or ointment containing verdigris, have been used; and afterwards lime-water, or solution of sugar of lead, have been applied to heal the scalp. Internally lime-water, decoction of the woods, sulphur, and small doses of calomel, have been given, and all of them occasionally with benefit, though Dr. Heberden remarks, that he has found little benefit from internal medicines. When an eruption like itch appears on the body, along with porrigo, it will be useful to give sulphur internally, and wash the parts with lime-water alone, or with the addition of a little oxymuriate of mercury, or with a sulphureous lotion; or anoint the parts with camphorated liniment, ung. acid. nitr. ung. hyd. nit. or sulphur ointment, and use the tepid bath occasionally. Sea-bathing is of great benefit.

* Quick-lime is sometimes employed for this purpose, and enters into the composition of many of the oriental depillatories.

† Dr. Underwood recommends the decoction of tobacco, or lotio saponaceo; Dr. Frank, urine; and Mr. Barlow, the following lotion: ℞ kali sulph. ꝑiii; sap. alb. ꝑiiss; aq. calcis, ꝑviiss; spt. vini, ꝑii. M.—Dr. Heberden recommends the decoction of white hellebore.

SECTION NINETEENTH.

The bloody scabs which are formed on different parts of the head, especially in the hollow near the neck, in consequence of vermin, are cured by combing and washing the hair daily, and rubbing some mercurial preparation on the scabs; whilst an ointment, composed of oil of bays and staves-acre, should be rubbed over the scalp among the hair, or the powder of staves-acre may be dusted in among the hair.

SECTION TWENTIETH.

Many children are subject to boils or inflammatory pustules, which have received different names according to their size and contents. We may chiefly notice two kinds; these containing pus; and those containing a more solid substance, which suppurate very slowly. The first are properly called pustules, and they are of different sizes. They generally are attended with a considerable degree of inflammation, and end in suppuration. The small abscess bursts, and a little scab forms, after which the inflammation dies away. Such a pustule has been called *ecthyma*, or sometimes *terminthus*. It requires in general little treatment, except the application of some soft ointment when the situation permits it. But if the pustules be numerous, as is often the case, after small-pox and other acute diseases; it will be necessary to use bark and the cold bath, especially sea-bathing; and the most painful and largest pustules may be hastened on by a poultice. The bowels are to be kept open.

The second are a kind of tubercles, called also boils, and by some are divided into the *furunculus* or acute boil, and the *phyma*, which is rather more tedious. These, like the pustules, are sometimes solitary, and often large; occasionally scattered in great numbers over the body. It is proper to apply a poultice of bread and milk, or of boiled turnips, until the top open, which happens sometimes by a kind of sloughing. Scarcely any matter is discharged, but a white or yellow core is found within, which is gradually thrown out,

and then the boil heals, like a pustule. During this process, the ung. resinosum forms a very proper dressing, and sometimes the application of precipitate accelerates the separation.

There is a kind of small and very itchy pustule, beginning with a black spot on the skin, and containing a sebaceous fluid, which can be squeezed out in a wormlike shape. Such pustules have been called *crinones*, and were supposed to proceed from worms. They have been cured by washing with soap lotion, and applying ung. hyd. nit.

SECTION TWENTY-FIRST.

Purpura, or *petechiæ sine febre*, is a disease not uncommon with children, particularly those who live in confined houses, or are fed on poor or improper diet. It consists of an eruption of small purple spots, which are circular, not at all elevated, seldom larger than the diameter of a coriander seed, more frequently of the size of the head of a pin. They are scattered over the whole body, and even over the hairy scalp. They come out suddenly, without any fever or apparent indisposition, and go off slowly. They are not in general attended with foul tongue, spongy gums, or fœtid breath; and the fæces do not become unnatural, but they sometimes are so before the disease takes place, and the belly may be very tumid, but these are not essential symptoms. By good diet, the use of acids, and removal to the country, together with moderate exercise in the open air, this disease is easily removed, or sometimes it goes off without any particular change being made in the mode of treatment. I have never seen this disease affect children till after they were weaned. This eruption is sometimes intermixed with hard papulæ, which forms a disease described separately, under the name of *lichen lividus*, by Dr. Willan. These continue for a considerable time, and end by slight exfoliation of the cuticle, but afterwards may be succeeded by a new crop. No peculiarity of treatment is required. A worse species of this disease affects children as well as adults, and attacks more slowly. For a considerable time before the spots appear, the

patient is languid, and feels uneasy at the stomach. Then red spots larger than in the former species, appear on the extremities, especially the legs, which are painful before the eruption comes out. The body is next affected, and the spots very soon become livid; sometimes vibices are also observed on the skin. This disease is attended with frequent and daily hemorrhage from the nose, mouth, alimentary canal, or vagina, and sometimes even from the toes. This species occasionally proves fatal, but it is often cured by the use of bark, wine, acids, good diet, and country air. It is, however, frequently very tedious. In worse cases, and in feeble children, the disease often begins with livid blotches on the scalp, which presently have the skin abraded; and then we may find some of them moist, and discharging blood or bloody matters; others dry, but without any scab or a cuticle; others covered with a thin black crust. Gangrenous sores form behind the ears; and the gums, especially near the symphysis of the jaws, become foul, and covered with brown lymph. An eruption of petechiæ then suddenly appears, and the child generally dies.

SECTION TWENTY-SECOND.

Erysipelas* sometimes affects children, and even infants, very soon after birth.† This disease appears to have been noticed by Avicenna, under the name of undimiam, or humid erysipelas, and afterwards at different times by other writers; but was first accurately described by Drs. Underwood, Garthshore, and Broomfield. Dr. Underwood conceives, that it rarely makes its attack after the child is two months old,

* Erysipelas is attended with fever, and the part affected is red and hot, with soft diffused swelling. The redness disappears when pressure is made with the finger, but immediately returns when that is removed. There is a tendency to the formation of vesicles, which bursting, form either scabs or troublesome ulcers.

† Dr. Underwood says, he once saw a child born of healthy parents, with sublivid inflammatory patches, and ichorous vesications, about the belly and thighs; but by the use of bark, and especially the mother's milk, it recovered.

oftener a few days after birth. Dr. Broomfield, however, saw it in a child much older, and I have met with the same circumstance. It makes its attack in general quickly, and the worst kind begins about the pubis, and spreads along the belly and down the thighs. There is not a great swelling, but the parts become hard, purple, and often end in mortification; so that the parts of generation drop off. This kind most frequently proves fatal, the peritoneum and intestines partaking of the disease. A milder kind, which I have met with much oftener, begins about the hands and feet, or not unfrequently the neck or face; and it is worthy of observation, that this frequently ends in suppuration; and on the neck especially, a very large collection of matter may be formed. In this kind of erysipelas, the early application of cloths dipped in solution of acetate of lead, with a considerable proportion of laudanum, may be tried with a view of allaying the inflammation; or if the disease be slight, the parts may be dusted with flour; but if suppuration is going to take place, an emollient poultice should be applied, and, as soon as the matter forms, it should be let out, and the parts gently supported with a proper roller, beneath which may be lightly placed compresses soaked in the vinous tincture of opium. The strength is to be supported by means of a good nurse, and giving cordials, as for instance, white wine whey. In the worst kind, the early application of camphorated spirit of wine has been recommended with great propriety by Dr. Garthshore. Ammonia, given early in doses of from five to ten grains every three hours, has been of service; but I have derived more advantage from calomel, in such doses as to act on the bowels, than from any other medicine. Green fætid stools are generally brought away. Bark has also been given, but the precise degree of advantage derived from this medicine, in infantile diseases, is not yet fully ascertained.

Erythema differs from erysipelas, in not being attended with the same soft diffuse swelling, nor having the same tendency to form vesications; neither is it preceded or accompanied by any regular fever, though the system may be oc-

asionally disordered during its appearance. In some cases, the inflamed part seems at first to be rough, as if covered with innumerable papulæ, but this appearance presently goes off. The treatment is nearly the same as in erysipelas. Sometimes small irregular erythematic patches, accompanied with œdematous swelling, appear about the joints, eye-lids, or different parts of children,* with fretfulness or feverishness. They in general require only to be kept clean, by being bathed with tepid milk and water, and dusted with some cool absorbent powder, or bathed with vinegar. Calomel is of service, and should be given pretty freely.

After the cow-pox, erythematic patches sometimes appear, not only on the arm, where the inoculation was performed, but even on more distant parts. This is most apt to take place after the vesicle has arrived at the height, or is on the decline. The inflammation sometimes ends, if not in gangrene, at least in a livid state of the parts, with fatal debility. Spirituous applications are of most service. When the part becomes livid, the strength must be carefully supported, and the bowels opened. In the commencement of this affection, saturnine lotions are proper, and often remove the disease. Calomel is useful. Dr. Willan describes this as a species of roseola.

There is a species of erythema, erythemanodosum of Dr. Willan, in which the patches are raised toward the centre. This elevation takes place gradually. In a few days, hard and painful tumours are formed, which threaten to suppurate, but they presently subside, soften, and end in desquamation. These are most frequent on the shin, but they may affect any part of the body. Laxatives are proper.

SECTION TWENTY-THIRD.

Excoriations frequently take place behind the ears, especially during dentition. The skin under the lap of the ear is

* The erythematic patches produced by the bites of bugs, &c. in those whose skin is delicate, are distinguished by having a small mark or speck in the middle.

covered with small pustules, and the inflammation extends from one to another. Sometimes a kind of erythematic inflammation takes place without pustules, and ends in vesications, which discharge thin matter. This complaint is not generally dangerous, but it is sometimes troublesome, and causes swelling of the lymphatic glands about the jaw and neck. Occasionally, however, the parts become first livid, and then gangrenous; and in such cases, the child generally sinks, even although the sloughs begin to separate. In mild cases of soar ears, it is seldom necessary to do more than wash the surface frequently with milk and water, and apply a little lint spread with spermaceti ointment, mixed with the white oxyde of mercury. If the part be very itchy, and not healed by this application, it may be bathed with rose water, containing a little tincture of opium, or weak solution of acetate of lead; but astringent lotions, or such applications as tend to heal the surface speedily, if it have been long abraded or discharging much, are justly esteemed dangerous, and apt to excite disease within the cranium. When the parts become livid, or threaten to mortify, camphorated spirit of wine should be applied, and afterwards, when slough has formed, the fermenting poultice: the strength must be carefully supported. The bowels should be kept regular.

SECTION TWENTY-FOURTH.

The gums, about the time of dentition, or sometimes when the first set of teeth are shedding, become spongy and ulcerated, discharging a quantity of thin fætid matter. This at first may generally be stopped, by applying a mixture of muriatic acid and honey, in such proportions, as to taste pretty sour; or the parts may be frequently washed with equal parts of lime water and tincture of myrrh, or with a solution of sulphate of zinc.

If neglected, the ulceration becomes either fungous, and is called scorbutic;* or sometimes of the kind which resem-

* In this case, some have recommended stimulants and astringent lotions, others compression. M. Berthe advises the part to be cut off, and Capdeville proposes actual cautery.

bles sloughing phagedena, that is, a foul fœtid spreading ulcer, destroying the gums, and in some cases the jaw-bone and cheek; so that if the child survive, no teeth are afterwards formed in that part of the jaw. Occasionally, from the very first, this disease assumes a malignant form, beginning with some degree of inflammation of the gum, generally where the incisors should appear. The part is not swelled, but bright, and of a pale red colour, and this extends along the gums a considerable way. This soon ulcerates, forming a line along the gum, marked by white or brownish slough; whilst exterior to this, the surface is inflamed, and this inflamed part next ulcerates; so that inflammation precedes ulceration, till the mouth and cheeks be affected, and a large fœtid sore formed, which soon injures the bones. This disease has been called the canker. It is attended with considerable discharge of saliva, and the breath is very fœtid. Good diet, the internal use of acids, and great attention to cleanliness, at the same time that we use acid or spirituous applications locally, are the most likely means of cure.

SECTION TWENTY-FIFTH.

Another corroding disease begins in the cheek itself, or the lip. It commences with some degree of swelling, which is hard, and firm, and shining. It generally begins on the cheek, which becomes larger than the other, and the upper lip becomes rigid, swollen, and glossy. On some part of the tumefied skin, generally on the cheek, we observe presently a livid spot, which ulcerates and spreads, both laterally and downwards. Being generally seated near the mouth, it soon reaches the gums; and even the tongue partakes of this disease, which is of horrible aspect. We often find a great part of the upper or under lip destroyed, perhaps only a flap or portion of the prolabium left, all the rest being eaten away. The gums are foul, the teeth loose, the tongue thickened, partly destroyed, and lying so close on other diseased parts, that we cannot say what is tongue or what gum, except by the child moving the tongue; and the mouth itself is filled

with saliva. The ulcer is foul, shows no granulations, but appears covered with a rough irregular coat of brown lymph. The surrounding parts are somewhat swelled: near the ulcer, they are hard and red; farther out on the cheek, they are paler, and have more of an œdematous look. These local appearances are accompanied with emaciation and fever, and the child is either restless, or lies moaning in a drowsy state. This disease often proves fatal; sometimes, indeed, the parts cicatrize, or the patient recovers after an exfoliation of part of the jaw-bone. This ulcer is best managed with stimulants, such as diluted muriatic acid, solution of nitrate of silver, camphorated spirit of wine, tincture of opium, &c. but sometimes it is necessary to give these up for a carrot or a fermenting poultice. The bowels are to be kept open, the strength supported by milk, soups, and wine; and acids, with ripe fruit, given liberally. Before ulceration take place, the best application is camphorated spirit of wine, or we employ friction, with camphorated liniment. A course of gentle laxatives is useful.

Another disease, destroying the parts, is called noma, which differs from the former, in destroying rather by gangrene than ulceration. It attacks chiefly the cheeks and labia pudendi of children, and begins with a livid spot without pain, heat, or swelling, or with very little; and it is not preceded by fever. It ends in gangrene, which destroys the part, and the patient often dies in a few days. It is to be treated with stimulant applications, or a fermenting poultice, whilst opium and wine are given internally, with or without bark, according as the stomach will bear. A variety of this disease appears with scarcely any swelling, but the inner surface of the vulva becomes livid, and then sloughs; so that the whole of the nymphæ and the clitoris may be destroyed, and the labia seem lined with fœtid brown sloughs. This requires the same treatment. It sometimes takes place after the measles or scarlet fever, and may be conjoined with the induration of the cheek or lip, previously described. It very often proves fatal.

SECTION TWENTY-SIXTH.

Aphthæ are small white specks or vesicles, appearing on the tongue, inside of the cheeks, and the fauces. They are extremely common, and almost every child has at one period or other an attack. In slight cases, a few scattered spots appear on the mouth, as if little bits of curd were sticking to the surface of the tongue, or within the lips. These in a short time become yellowish, and then fall off, but may be renewed for three or four times. The child, in this complaint, is generally somewhat fretful, the mouth is warmer than usual, and the bowels rather more open, and sometimes griped. It is most frequent within the first month, but may occur much later, even after the child has several teeth; and in this case, the aphthæ often appear on that part of the gum which surrounds the teeth. In bad cases, it is not unusual for fever* to attend the eruption, and the child is sometimes drowsy and oppressed for some hours, or even a day or two before the aphthæ appear, and occasionally is affected with spasms. The eruption is pretty copious in the mouth, and often becomes confluent, so that almost the whole surface is covered with curdy looking matter. The stomach and bowels are very much disordered, and the child vomits and purges. The stools are generally green, sour smelled, and sometimes acrid, so that the anus is excoriated. The aphthæ may not be confined to the mouth, but may descend along the trachia, producing cough, and great difficulty of breathing; but much oftener they go along the œsophagus to the stomach, which becomes very sensible, is painful to the touch, and the child vomits speedily after sucking. The mouth is likewise tender, so that the child sucks with pain, and with difficulty, if the crusts become hard, the tongue being rigid. After a short time, the aphthæ change their colour, and begin to fall off; but they may be renewed, and the abdominal symp-

* Dr. Underwood is of opinion, that fever very rarely attends aphthæ, when it appears as an original disease

toms may increase, so that the child is exhausted, and dies. There are two sources of danger, in bad cases of aphthæ: the first proceeds from the disorder of the alimentary canal, which always attends the disease; and the second arises from the particular state of the system, connected with the local disease, as in malignant sore throat, and many other diseases. It behooves us then, in forming our judgment, to attend to the sensibility of the stomach and bowels, and pay attention to the egesta. Frequent vomiting, repeated thin stools with griping, and a tender state of the abdomen with or without tumor, are very unfavourable; drowsiness, oppressed breathing, moaning, spasms, and great languor, with frequent pulse, are likewise dangerous symptoms. With regard to the local disease, we find, that if the spots be few and distinct, and become a little yellow, and then in a day or two fall off, leaving the part below clean and moist, we may expect that the eruption will not be renewed, or will become still more mild. But if the aphthæ turn brown or black,* which last is not a common colour, the prospect is not so good, and is worse in proportion to the rapidity with which they change. The longer that the aphthæ adhere, the more apt are they to become brown; and the case is worse, than when one crop succeeds another more speedily. If the succeeding crop be more sparing than the former, we augur well, and *vice versa*. When the aphthæ fall off, we expect their renewal, if the parts below are parched and look foul. If, however, in this state, the eruption do not take place, and the oppression, weakness, and drowsiness continue, the danger of the case is increased; and in such circumstances, it has been observed, if the eruption afterwards appear, the child is relieved. It is also unfavourable, if a new eruption come out before the former one be thrown off. When the aphthæ fall off, the mouth becomes very tender, so that the mildest fluids sometimes give pain. Occasionally a salivation takes place, and the inside of the cheek bleeds.

* Sometimes mortification takes place, and even the palate bones have been known to suffer.

Dr. Armstrong remarks, that he has seen the tongue covered with a crust of aphthæ, and the cheeks and gums full of angry pustules, and little fungous excrescences.

From this account it will appear, that aphthæ exist under two forms. The mild, in which the eruption is slight, and the attending symptoms very trifling, the health being scarcely at all affected; and the severe, in which the system does become affected, the child suffers considerably. Now with regard to the causes, we find, that this disease is produced by derangement of the stomach and bowels, excited by improper diet, exposure to cold, &c. and sometimes slight attacks are occasioned by giving spoon-meat too warm. Some particular states of the atmosphere would seem either to excite this disease, or predispose to it, for it is most frequent in damp situations, and in spring and autumn; and Van Swieten tells us, that it is peculiarly prevalent in Holland. It would appear also to be produced by sucking an excoriated nipple; and on the other hand, an aphthous mouth may infect the nurse. It has been said by Dr. Moss, that a healthy child, sucking a breast immediately after a diseased child, receives the infection, and I believe it to be the case.

In the treatment of aphthæ, the cause is often overlooked, and local applications are expected to remove the disease. The first object, however, is to remove the cause which most frequently is resident in the stomach and bowels. For this purpose, strict attention ought to be paid to the ingesta; for many nurses, instead of bringing the child up at first entirely, or almost entirely on the breast, give spoon-meat, and that in too great quantity, and not unfrequently combined with an anodyne, to keep the child quiet. Emetics have been strongly recommended by Arneiman and others, in this disease. A little of the *vinum ipecacuanhæ* may be employed, which is preferable to antimony. This may be given early in the disease, if it require interference with active medicines; but if relief be not soon obtained, it should not be repeated. Gentle laxatives are highly proper, such as manna, castor oil, or magnesia. Dr. Underwood seems to trust chiefly to

absorbents. A small proportion of rhubarb may, together with an aromatic, be occasionally added to the magnesia. Emollient clysters, made pretty large, and without stimulating ingredients, are likewise useful. Milk or soup may also be injected, to support the strength, when the child does not suck or take food by the mouth. If, however, the child have a purging, then we must proceed according to the directions which will be given respecting diarrhœa. Where the debility is considerable, the strength must be supported by cordials, such as white-wine posset. The bark has been recommended when the debility is great, and especially when the mouth has a sloughy gangrenous appearance, or tendency thereto. Children, however, cannot take it, so as to do good; and therefore, when it is employed, it should be in the form of clyster mixed with starch,* or mucilage, but I cannot speak decidedly as to its benefit. Small doses of calomel, with opiates, are useful.

Local applications have been always employed, and in slight cases are trusted to by the nurse, without any internal medicine. The most common remedy is borax, in the form of a saturated solution in water, or mixed with honey or syrup; or a little of the powder may be put into the mouth, and it seems to have a better effect than could be expected from its sensible properties. It cannot, however, as Dr. Bisset observes, be expected to remove the aphthæ until they are about to separate, when it ought to be employed, and may prevent a renewal. Until this period, a little veal soup, or white of egg beat up with water, may be given. Van Swieten recommends syrup of turnips. A solution of the sulphate of zinc, or diluted muriatic acid have also been proposed as lotions, and may occasionally be of service; but it is highly improper to wash the mouth roughly, with a cloth dipped in these or any other lotions.

* From a scruple to half a drachm of bark may be given to a young child, mixed with half an ounce of fluid. Sometimes a little laudanum may be added to the clyster, to make it be retained.

SECTION TWENTY-SEVENTH.

Aphthæ sometimes appear on the tonsils of children and adults, with or without fever; and from an apprehension of the existence of a malignant sore throat, give much alarm. There is, however, very little inflammation, and no lividity of the parts; the fever is very moderate, the strength not impaired, and the aphthæ do not spread, but, becoming brown, presently fall off. This is cured by acid gargles and laxatives. Another kind of sore throat is attended with the usual symptoms of inflammation, accompanied with an exudation of tough yellow mucus. It yields readily to the same treatment.

SECTION TWENTY-EIGHTH.

About the time of dentition, the tongue, gums, and inside of the lips, are sometimes spotted over with superficial excoriations. They are seldom larger than a coriander seed, of an irregular shape, and covered with yellow or brownish mucus, adhering so firmly, and being so thin, as to resemble the solid base of the sore itself. They are tender, and generally accompanied with salivation. They are cured by being touched with alumen ustum, or lightly with a pencil, dipped in weak solution of nitrate of silver. Borax also, or tincture of myrrh, seems to do good. But perhaps these would always heal easily, if left to follow their own course.

SECTION TWENTY-NINTH.

Infants may be affected with syphilis, in different ways. They may be diseased in utero, in consequence of the state of one or both of the parents. They may be infected by passing through the vagina, when the mother has chancres; or by sucking a woman who has the nipple affected. Of all these methods, the first is the most frequent; and it is worthy of remark, that this mode of infection may take place, when neither of the parents has at the time any venereal swelling or ulceration, and perhaps many years after a cure has been apparently effected. I do not pretend to explain here the

theory of syphilis, but content myself with relating well established facts. (t)

In such cases, it is very common for the mother to miscarry, or have a premature labour, without any evident cause; and when this takes place, the child is found to have the epidermis wrinkled, or peeled off, as if it had been macerated, and sometimes deeper ulcerations are discovered. The liquor amnii is turbid and fœtid. We are not, however, to suppose, in every instance where these appearances are met with, that the child is syphilitic; for any cause, producing the death of the fœtus, a considerable time antecedent to its expulsion, will produce nearly the same appearance. The diagnosis then, must depend upon the repetition of the premature labour, the circumstances attending it, the history of the parents, and the distinct appearance of ulceration. In such cases, the parent originally affected ought to undergo a mercurial course; and if the other parent have any suspicious symptoms, mercury should be administered to both. Sometimes the disease seems to wear itself out, without any remedies being employed; and the children, born in future, are healthy. But it often happens, that the child, though it have received the venereal disease in utero, and probably possessed it as a peculiarity of constitution from the time of conception, is born alive, and has even no apparent disease on the skin, or in the mouth. Frequently, indeed, it is born before the time, and perhaps it has been preceded by one or two dead children. It may be clean and healthy, and continue so for even a month or two, but oftener it is feeble, and rather emaciated; and sometimes it has at the time of birth, or soon afterwards acquires, a wrinkled countenance, having the appearance of old age in miniature, so very remarkably, that no one who has ever seen such a child can possibly forget the look of the *petit vieillard*. In such a case, the child has scarcely any hair

(t) Congenital affections of the skin, apparently of an erysipelatous nature, do occasionally occur bearing a very close resemblance to those produced by syphilis. I have met with several of this sort, under circumstances, which precluded all suspicion of an impure taint. EN.

upon the head, but may have pretty long hairs on the body; it cries in a low murmuring tone, and appears so weak, that it cannot suck for a minute at a time. But whether the child be apparently healthy or emaciated at the time of birth, other symptoms presently appear;(1) and of these, the most frequent and earliest is generally an inflammation of the eyes, accompanied with ulceration of the tarsi and purulent discharge. This appears a few days after birth. The eye presently, if neglected, becomes ulcerated, and the cornea opake. Copper coloured blotches, ending in ulceration, appear on the surface; or numerous, livid, flat, suppurating pustules, cover the surface; or many clusters of livid papulæ appear, which presently have the top depressed, and then end in ulceration. These papulæ are sometimes attended by an eruption of pale shining pimples on the face, which enlarge, become red, and often run together. Children have sometimes an eruption of herpetic looking spots, which I have formerly described, and which resemble syphilis. The syphilitic blotches are of a darker colour, are more apt to end in ulceration than in scurf, or to form crusts or scabs, and seldom disappear without the use of mercury; or if they do, they soon return, and become worse by continuance, and presently are combined with additional symptoms of the disease.

The genitals and anus(2) become ulcerated, and sometimes

(1) M. Mahon, from his observations in l'Hospice de Vaugirard, says, that the symptoms appear as follows, the most frequent being put first. Ophthalmia; purulent spots; ulcerations; tumors; chancres on the mouth, and aphthæ; livid, ulcerating, and scabbing pustules: chancres on the genitals and about the anus; excrescences; peeling off of the nails of the feet and hands.

(2) Children may have ulceration about the anus, genitals, and groins, succeeding intertrigo, owing to neglect of cleanliness, without any venereal affection. But the absence of other symptoms, particularly of sore throat, or ulcer of the mouth, and the amendment experienced by the use of lotions, and keeping the part dry and clean, will enable the practitioner to form a diagnosis, and the aspect of the sores will assist him. This fretting of the parts, and even some degree of excrescence may attend psoriasis, and the herpetic spots of children formerly described; and in this case, especially if the child belong to a poor person, the disease is too often de-

excrescences sprout out from these parts. Foul sores, having retorted edges, and a centre pale and like lard, cover the inside of the mouth; and chancrous ulceration takes place on the lips, especially about the angle of the mouth. These sores and chops are often surrounded pretty extensively with a whiteness of the skin, as if the part had been scalded or recently rubbed with lunar caustic, and, perhaps, from this circumstance, these sores have been called, though improperly, aphthæ. They may, however, be combined with aphthæ. The nostrils become stuffed, and discharge purulent matter. On the face and hands we see obstinate sores, covered with pus, others with crusts, whilst the intervening skin is sallow. The child is hoarse, and the glands of the neck, with those below the jaw, are swelled. Children, like adults, have in general the surface first affected, and then the mouth and throat. They seldom live long enough to have the bones diseased. They are always in great danger, and those who are much diseased never recover. Mahon, with great justice, ranks among incurable symptoms, the old decrepid visage, great destruction of the globe of the eye; chancres on the middle of the lip, spreading to the frænum, and extensive ulceration of the mouth. It must be remembered, that syphilis not only may appear under its own peculiar characters, but may also exist under the form of some of the eruptions common to children; such as *crusta lactea*, herpes, psoriasis, &c. These are known to be venereal, by their being of a more livid colour than usual; they tend slowly to ulceration, and when the scab or crust with which they are furnished comes off, a foul honey-comb like ulceration is observed below. But the best diagnostic is, that they are soon attended with other symptoms, such as hoarseness, ulceration of the mouth and throat,

cided to be syphilis. There is, however, perhaps no individual symptom, which can decidedly characterize syphilis in children; and the diagnosis must be formed by the combination of symptoms, and often by the progress of the disease. Many children are rashly put upon a course of mercury, who do not require it, perhaps, because the practitioner thinks it a point of honour to determine the nature of the disease at the first glance

&c. We must make up our judgment slowly, and with deliberation.

When a child is infected during delivery, the disease appears more promptly on the surface, in the form of ulcers; and the usual train of symptoms follow, the mouth and genitals becoming presently affected. The disease generally appears within a fortnight after delivery, sometimes so early as on the fourth day.

If the child receive the infection from the nurse, we discover ulcers on her nipples, and the disease appears on the child's mouth, before the surface of the body be affected.

It has been proposed to cure this disease by giving mercury to the nurse alone, but this method is now abandoned, mercury being given directly to the child; and it ought to be remembered, that this medicine produces less violent effects on the bowels in children, than in adults, and scarcely ever excites a salivation. But if given too long or too liberally, it may kill the child by its irritation, or may excite convulsions. Calomel is very often employed, and with great benefit, a quarter or half of a grain being given three times a-day. Others advise frictions, which are equally useful. Fifteen grains of mercurial ointment are rubbed on the thighs alternately once in two days, until the mouth be found hot, when it is intermitted or continued, according to the state of the system, and the effect on the disease; it must be used till the disease be removed. It has been remarked, that children, apparently cured when on the breast, have had a relapse after being weaned. If the child be griped, a gentle purge, and then an opiate, will give relief. Some have used the ung. acid. nitros. in place of the mercurial ointment, but it is not to be depended on. It is, however, useful as an auxiliary, when applied to the affected part of the surface. Sometimes, in consequence of the use of mercury, a peculiar eruption, called the *eczema mercuriale*, takes place. This generally begins on the lower extremities, and spreads to the body. It consists of very small vesicles, which at first are like papulæ. Each vesicle may with a glass be seen to be surrounded with redness; and if they are not disturbed, they acquire the size

of pins' heads, and then their contents become opaque. They are attended with heat and itching, and a general tumefaction of the part affected. Presently, even if not scratched, the vesicles burst, discharging thin acrid fluid, which stiffens the linen, and sometimes excoriates the part. When the discharge ceases, the cuticle becomes of a pale brown colour, and then blacker; and separating in pretty large flakes, leaves the skin below of a light red colour. After this, the skin comes off in scales or scurfs, perhaps two or three times. The disease ceases of itself, sometimes within ten days; often, however, it is protracted longer. Those parts which are first affected, are first cured. Relief may be obtained, by applying saturnine lotions, or weak saturnine ointment.

SECTION THIRTIETH.

The disease termed skin-bound, may be divided into the acute and chronic, the last being chiefly met with in private practice. The acute species generally appears soon after birth, and proves fatal in the course of a few days. The best description of this disease is given by Dr. Underwood, and by M. Andry, as it appeared in the hospitals of London and Paris. In London, the children were seized at no regular period; but it was observed, that, whenever the disease appeared, several children were attacked within a short time, and especially those in the last stage of bowel complaints, in which the stools were of a clayey consistence, and of which the induration of the skin appeared to be only a sequel. The skin was of a yellowish white colour, like wax, and it felt hard and resisting to the touch, but not œdematous. It was so fixed to the subjacent flesh, that it would not slide, nor could it be pinched up. This state was found to extend over the body, but the skin was peculiarly rigid about the face and extremities. The child was always cold, did not cry, but made a moaning noise, and had constantly the appearance of dying immediately. In the French hospitals, the disease differed, in being more frequently attended with spasm, or tetanus, and always with erysipelas, especially about the pubis, which,

though purple, was very cold. These erysipelatous parts rarely suppurated, but sometimes mortified. The legs were œdematous, and the children died on the third or fourth day, or at farthest, on the seventh day from birth. This disease differs, then, principally from that observed in this country, in being combined with erysipelas and tetanus, which are by no means essential symptoms; and perhaps the erysipelas of children has sometimes been mistaken for the disease called skin-bound.

In private practice, the disease appears under a more chronic, though not less dangerous form. The children affected, are generally delicate; and in such cases as I have seen, the skin, from birth, was not so pliable as it generally is, being most rigid about the mouth, which had more of the orbicular shape than usual. The skin gradually becomes tight, hard, and shining, and of a colour a little inclined to yellow. In some cases, the whole skin is thus affected; in others, chiefly that about the jaws, neck, and joints. The scalp is often bald and shining, and the veins of the head peculiarly large and distinct. The appetite, at first, is not greatly impaired, and the bowels are sometimes uniformly regular. Presently the child becomes dull and listless, and moans, and gradually sinks, or is carried off by fits. The complaint lasts for several weeks. In some cases, the disease is less severe, the appearance of the child being healthy, and the thickening and rigidity of the skin confined to the joints of the extremities.(3) No light is thrown on the nature of this complaint by dissection, which simply discovers a deficiency of oil in the cellular substance, with induration. In

(3) Adults are sometimes seized with this disease. A very remarkable case of this kind is recorded in the 48th vol. of the Phil. Trans.—The subject of it was a girl, aged 17 years. She had excessive tension, and hardness of the skin, all over the body, so that she could hardly move. The skin felt like a dry hide or piece of wood, but she had some sensation when pressed on with the nail or a pin. It was cold and dry, the pulse was deep and obscure, but the digestion good. It began in the neck, then affected the face and forehead, and at last she could scarcely open the mouth

the acute species, the liver has been found enlarged, and the gall bladder distended. Sometimes more children than one in the same family have been affected; and in such cases, they have been always of the same sex. A variety of remedies have been made use of, such as mercury, laxatives, baths, and emollient frictions; but seldom with any advantage. A course of calomel powders has, however, appeared to do good, when the affection was confined to the extremities. Decoction of sarsaparilla, with the frequent use of the warm bath, decoction of mezereon, and a variety of diaphoretics, might be tried; and in cases where more children than one in the same family have been affected with the chronic species of this disease, it might be worth while to try the effects of mercury, and some other medicine, on the parents.

SECTION THIRTY-FIRST.

The small-pox begins with a febrile attack, which commences generally about mid-day. It is marked by chillness, listlessness, pain in the back and loins, drowsiness, vomiting, pain in the region of the stomach, which is increased by pressure, starting, and coldness of the extremities. As the fever advances, the pulse becomes more frequent, the skin hotter, the face flushed, the eyes tender, and the thirst considerable. The child starts, grinds his teeth, or has one or more epileptic fits, or sometimes complains of severe cramp in the legs, or lies in a kind of comatose state. On the evening of the third, or morning of the fourth day, an eruption appears on the face, and then on the neck, from which it spreads to the body. In mild cases, the eruption is completed by the evening of the fourth, but sometimes not till the fifth day, or even later, if the pustules be very numerous; and then the fever declines, or goes off altogether. The eruption consists, at first, of small hard red pustules, of a fiery appearance. On the second day, the top is clear, and a very small vesicle is observed to be forming. On the face, we frequently find patches like measles, but containing many minute vesicles. Next day, if the eruption is to be copious, the number of pustules is farther increased, especially on the face, where

we often find more patches. These patches, and the succeeding confluent vesicles, seldom appear in the inoculated small-pox, or in the natural small-pox, when very distinct. They are numerous, in proportion to the tendency to the confluent form of the disease. The pustules on the body are more raised and rounder, though in some places they are flatter, and more extended. The base is surrounded with an inflamed rim; and presently, if the eruption be copious, this inflammation spreads from one pustule to another, so that all the surface appears to be red. The cuticle of the vesicle, at this time, is somewhat opaque, but its contents are limpid, like water. On the fourth day, if there be any patches on the face, they are evidently covered with flat confluent vesicles; on the body and arms, the vesicles are larger and rounder than the day before. The surrounding redness is a little paler, the skin of the vesicle is whiter, and more of the pearl appearance; so that, at the first glance, the eruption seems to consist of white elevations. The vesicles are full and smooth. On the fifth day, they are rather flatter. On the sixth day, the skin of the vesicles on the body and extremities is drier and harder, and the contents still limpid; all those on the body are entire, but about the chin some have been broken, and crusts are formed. If there have been patches on the face, these are now covered with flat vesications. On the seventh day, the vesicles on the body and extremities are of a dead white colour at the circumference, but more glossy, like candied sugar, at the centre. Their contents are a little turbid; more crusts are formed on the face. On the eighth day, the fluid on the extremities is whitish. On the ninth day, the crusts on the face are more numerous, and they begin to be formed about the bend of the arm, &c. The pustules on the extremities are whiter, as if filled with pus, but the fluid is thin and milky; the skin of the vesicles is thick. On the tenth day, the pustules on the face are covered with scabs, and many are formed on the extremities. On the breast, the vesicles are prominent, like two thirds of a sphere, but compressed, and have no redness around them. Many vesicles are empty, and covered with thin brown skin. Scabs are formed,

by the skin becoming dry, hard, and brown, or sloughing. The contained fluid is partly absorbed, and partly effused by exudation, so as to add a crust to the slough of the vesicle.

When the scabs are picked off, about the seventeenth day, the base of the mark is in general elevated above the rest of the skin, but the centre is depressed a little below the margin. The colour is light red. On the twentieth day, the blanes on the body and extremities are smooth, flat, or slightly scurfy, so that they somewhat resemble herpetic spots.

The process is not always regular, for, in very mild cases, the suppuration is indistinct, and the scab thin; the pustule dries without forming much matter, so that inoculators can scarcely get their lancet wet. This is a favourable condition. Sometimes the matter, though considerable in quantity, does not exude to form a scab, but is absorbed, and the vesicle remains for a time entire, forming what has been called *variola siliquosa*.

About the seventh or eighth day of the disease, when the pustules are numerous, the face swells; but about the tenth or eleventh, it subsides, and then the hands and feet swell. It is also common, about the sixth or seventh day, for the throat to become sore, with sneezing, and some degree of hoarseness or cough; and in unfavourable cases, the secretion about the throat becomes tough and thick.

When the pustules are numerous, a return of the fever may be expected about the eleventh day. This is called the secondary fever, but in mild cases it is very trifling, and does not last long.

Such is a general history of the distinct small-pox; but the disease may also appear under a different form, known by the name of the confluent small-pox. In this case, the eruptive fever is more severe, attended with greater pain in the loins, and often with coma. It differs also from the former, which is of the inflammatory kind, in being of the typhoid type, so that sometimes petechiæ appear. The eruption comes out earlier, generally on the morning of the third day,

and is sometimes preceded by erythematic inflammation of the face or neck. The eruption is copious, and at first, more like measles than small-pox; so that some practitioners have, at this stage, mistaken the one disease for the other. The pustules, which are not so much elevated as the variola discreta, become confluent, especially on the face; and though they may be confluent only on the face, yet those on the body are not of a good kind. They form matter earlier, do not retain the circular form, and, instead of having the interstices of the skin, where they do not coalesce, of a red colour, as in mild small-pox, these spaces are pale and flaccid. The coalescence is most remarkable on the face, which often seems as if covered with one extensive vesicle. The matter which these pustules form is not thick and yellow, like good pus, but either of a whitish, brown, or black colour. Scabs generally form about the eleventh day of the disease, but these do not fall off for a length of time, and leave deep pits. The swelling of the face is greater and more permanent than in the former species, and the eruptive fever does not go off when the eruption is completed; it only diminishes a little, till the sixth or seventh day, when it increases, and often proves fatal on the eleventh.

The treatment of the distinct is different from that of the confluent small-pox. During the eruptive fever, the antiphlogistic regimen must be carefully enjoined, the diet must be light and sparing, the surface kept cool and clean, and the bowels loose. Emetics, at an early stage of the fever, are often serviceable, and it is generally proper to give laxatives. Epileptic fits are relieved by opiates and cool air. When the eruption is coming out, the cool regimen should still be persisted in, and the bowels kept open. After the pustules have appeared, the fever generally abates; and then, although heat should be avoided, the cooling and purging plan need not be carried so far as formerly. But if the fever still continue, these means should be also continued. The diet must be sparing, and plenty of ripe fruit should be given. If secondary fever supervene, it is to be removed, chiefly by laxatives

and cool air; or if there be oppression at the stomach, a gentle emetic may be given.

In the confluent kind, during the eruptive fever, the cold plan should be diligently employed, and cathartics are of essential benefit. When the eruption appears, the cooling regimen should still be persisted in, and both vegetable and mineral acids ought to be given freely. Bark is also proper, provided that it is not productive of sickness or vomiting. When the fever is aggravated, at the height of the disease, emetics have been sometimes given with advantage; but in general they are not necessary, and more benefit is derived from laxatives and clysters. Opiates are useful, for abating irritation; and wine, with nourishing diet, should be prudently given, to support the strength, which is apt to be completely exhausted under the constant fever and irritation. On this account also, it is necessary to restrain diarrhœa, when it is frequent, and adds to the weakness. Blisters have been advised as stimulants, but they are only useful when deep seated inflammation exists. Sometimes the brain seems to be affected, the head being pained, the eyes impatient of light, and the patient delirious. In this case, leeches may be applied to the temples, and a blister put on the head. When the lungs are affected, blisters on the sides or breast do good. When the stomach is very irritable, if saline draughts and opiates do not give relief, a small blister should be applied over the stomach. If the swelling of the face subside quickly, and be not followed by tumefaction of the feet and hands, blisters have been applied to the wrists, but sinapisms are better, though it is not decided, that either are of great utility. When the throat is much affected, and filled with viscid phlegm, gargles are of use, and sometimes a very gentle emetic gives relief.

If the eruption suddenly subside, cordials tend to bring back a salutary inflammation, or if it altogether recede, the tepid bath, with ammonia, and other internal stimulants, will be proper. The boils and inflamed pustules, succeeding variola, are very troublesome, and sometimes prove fatal. When large, suppuration should be hastened with a poultice;

when small, unguentum resinosum may be applied, or if they be indolent, gentle friction, with camphorated liniment, and bathing with laudanum, is of benefit. The strength must be supported, and, as soon as possible, sea-bathing should be resorted to.

The violence of the variolous disease is generally lessened by inoculation,* which was first introduced into this country in the year 1721. The operation itself is very simple, consisting merely in abrading the skin on the arm or leg with the point of a lancet, and then applying on the small scratch a little of the variolous matter, which should be taken early, as, when it is delayed until the pustules are collapsing or scabbing, it sometimes produces a spurious inflammation. By the third day, we are sure of success, by observing a slight redness on the arm at the incision, which resembles, from the coagulated blood, a little black speck. On the third or fourth day, the part is hard to the touch. The redness gradually increases for the two succeeding days, and then a small vesicle may be perceived. By the eighth, or at farthest the tenth day, the pustule has completely the variolous character. It forms a circular elevation, surrounded with circumscribed redness, and the vesicle is a little flattened on the top. The constitution, at this time, becomes affected; and the earlier that the eruptive fever appears, the milder in general is the disease. The character of the succeeding disease may also often be foreseen, even before the eruption take place, or be completed, by examining the arm; and on this subject, Dr. Adams has given us some remarks, which will be found in the notes.(5)

* Inoculation, even after exposure to infection, is capable of producing a mild disease.

(5) If the progress have been very favourable, the arm, about the eighth or tenth day, will exhibit a circular elevation, flattened on the surface, and surrounded with circumscribed redness. With this state of the arm, attended with high fever, we may be sure that the patient will do well, and probably the secondary pustules will not maturate. If the elevation of the cuticle be less marked, perhaps not circular, but at the same time not with jagged edges, if the surrounding redness follow the irregular shape of the pustule at a considerable distance, having, however, its circumfer-

The safety of the practice of inoculation is greatly increased, by having the system as free as possible from every diseased state; and, therefore, children are not inoculated during dentition, at least if they cut their teeth with any trouble. Very young children are not considered as favourable subjects; Dr. Fordyce observing, that two-thirds of those who died from inoculated small-pox were under nine months. If we have our choice, the best age is said to be from two to four years, but it is dangerous to wait so long, lest the child should take the casual small-pox; and Dr. Adams informs us, that of three thousand children inoculated at the hospital in one year, two thousand five hundred were under two years of age, yet only two out of that number died. Full plethoric children should be frequently purged, and fed sparingly, before the operation. Some particular modes of preparation have been often employed, such as giving calomel or antimony, but these have very little effect. The chief attention ought to be directed to bring the body into a state of good health, if previously delicate, or diseased: and on the other hand, if requisite, diminishing plethoric and inflammatory disposition by the obvious means. After the inoculation, the bowels must be kept open, and all stimulants avoided; and when the eruptive fever commences, the antiphlogistic regimen is to be strictly practised, and often ha-

ence defined and not shaded, then, though the fever may have been higher than in the former case, yet we may be sure that the danger is over, and if any pustules appear, they will be late, and probably will not mature. If the inflammation run high at the arm, with surrounding redness irregular in its figure, and shaded instead of being circumscribed at its circumference, we must examine the arm carefully; if we find a cluster of very small blisters, which are only confluent from their vicinity, but distinct at the edges, where they are more distant, we may, although the fever have been considerable, prognosticate that he will have a mild subsequent disease, and that the arm will heal easily. But if this high inflammation be unattended with any distinct little bladders, particularly, if instead of rising above the surface, the inoculated part seems somewhat depressed with a dusky brown skin, as if drawn lightly over it, the fever will be at the same time considerable; and though all constitutional danger may subside with it, yet we may expect a mortified part in the arm, but it will be cured by exposing it to the air. Popular View, p. 63, et seq.

to good an effect, that few or no pustules come out; or if they do, they do not maturate, and we have no secondary fever. In general, the arm heals kindly; but when it forms a sore, it should be exposed to the air, or dusted with chalk; or if it threaten gangrene, it should be bathed with camphorated spirits or tincture of myrrh.

SECTION THIRTY-SECOND.

As a preventive of the small-pox, the vaccine inoculation is now very generally practised. This is productive in general, of a very mild and safe disease, consisting of a single vesicle, forming on the place where the inoculation was performed. On the third day, the scratch is slightly red, and, if pressed with the finger, feels hard. Next day, the red point is a little increased, and somewhat radiated. On the fifth day, a small vesicle appears, but it is still more easily seen on the sixth. This gradually increases, till it acquire the size of a split pea. The colour of the vesicle is dull white, like a pearl. Its shape is circular, or slightly oval, when the inoculation has been made with a lengthened scratch, acquiring about the tenth day, a diameter equal to about the third or fourth part of an inch. Till the end of the eighth day, the surface is uneven, being depressed in the centre; but on the ninth day, it becomes flat, or sometimes rather higher at the middle than at the edges. The margins are turgid and rounded, projecting a little over at the base of the vesicle. The vesicle is not simple, but cellular, and contains a clear limpid fluid like the purest water. On the eighth or ninth day, the vesicle is surrounded with an areola of an intense red colour, which is hard and tumid. About this time, an erythematic efflorescence sometimes takes place near the areola, and spreads gradually to a considerable part of the body. It consists of patches, slightly elevated, and is attended with febrile symptoms. On the eleventh or twelfth day, as the areola decreases, the surface of the vesicle becomes brown at the centre, and is not so clear at the margin; the cuticle gives way, and there is formed a glossy hard scab, of a reddish brown colour, which is not detached, in general,

till the twentieth day. When it falls off, we find a cicatrix, about half an inch in diameter, and with as many pits as there were cells in the vesicle. During the progress of the vesicle, there is often some disorder of the constitution, and occasionally a papulous eruption, like strophulus, appears near the vesicle.

As security against the small-pox is not procured by spurious vaccine vesicles, it becomes necessary to study carefully the character of the genuine disease, which I have briefly described. A very frequent species of spurious cow-pox, is rather a pustule than a vesicle. It increases rapidly, instead of gradually. From the second to the fifth or sixth day, it is raised toward the centre, and is placed on a hard inflamed base, surrounded with diffuse redness. It contains opaque fluid, and is usually broken by the end of the sixth day, when an irregular yellowish brown scab is formed. If the vesicle be regular in its progress, and have pretty much of the general aspect of the vaccine vesicle, but contains, on or before the ninth day, a turbid or purulent matter, it cannot be depended on; and the security will be still less, if the scab be soft. Besides these, Dr. Willan has characterised three spurious vesicles. 1st, A single pearl coloured vesicle, less than the genuine kind; the top is flattened, but the margins are not rounded nor prominent. It is set on a hard red base, slightly elevated, with an areola of a dark rose colour. The second is cellular, like the genuine vesicle, but somewhat smaller, and with a sharp angulated edge. The areola is sometimes of a pale red colour, and very extensive. It appears on the seventh or eighth day after inoculation, and continues more or less vivid for three days; during which, the scab is completely formed. This is less regular than the genuine scab, and falls off sooner. The third is a vesicle without an areola. These forms of the disease do not give security against the small-pox; and it would appear, that a vesicle, which is even regular at first, or which runs through the whole course with regularity, may fail to secure the constitution; for there are well authenticated cases, where the small-pox has thus succeeded the cow-pox. Professed writers

on this subject, have enumerated three causes of failure. 1st, From matter having been taken from a spurious vesicle, or from a genuine vesicle at too late a period. The best time for taking matter is about the eighth day. After the twelfth, or when it becomes purulent, it cannot be depended on. 2d, From the patient being seized, soon after vaccination, with some contagious fever, such as measles, scarlatina, influenza, or typhus. 3d, From his being affected, at the time of inoculation, with some chronic cutaneous disease, such as tinea, herpes, &c. The precise circumstances under which these causes produce their effect, or the degree to which they must be present in order to operate, have not yet been determined with certainty.

Even where none of these causes exist, and when the vesicle runs its course with distinctness, it does, though very seldom, happen, that the constitution is not rendered unsusceptible of the variolous action. It were much to be wished, that some test could be discovered, by which the security could be determined. The constitution is often manifestly disordered during some part of the vaccine progress, and such children are most probably secure; but sometimes the disorder is too slight to be discovered, and therefore this sign is not to be relied on. We are also assured, that even when no constitutional disorder has taken place, the child is secured. Other means, then, have been resorted to, in order to discover if the system be affected, so as to have a complete change induced by the inoculation. These are two in number. 1st, If a second inoculation be performed on the sixth or seventh day after the first, a vesicle will arise, and proceed in the usual way, till the efflorescence appear round the first vesicle. Then, if the system be affected, the second will begin to fade, and in two or three days will disappear. 2d, If a second inoculation be performed any time after the twelfth day after the first inoculation, some degree of inflammation will be induced; but if the system have been affected, no regular vesicle will be produced. But the most satisfactory method is, to inoculate with small-pox matter, which produces most frequently a small pustule, generally, totally unat-

tended with constitutional affection; but sometimes, even although the constitution have been changed by the vaccine inoculation, a slight febrile affection may be excited, either without any secondary pustules, or attended by an efflorescence on the skin, or an eruption of small hard pustules, which disappear in about three days. It unfortunately happens, however, that parents in general do not think it necessary to adopt any of these means; and inoculators, perhaps, trust too much to their own power of discrimination, in determining how far a vesicle is capable of producing the desired effect. Some test is the more requisite, as vaccination is often performed in a very careless manner, and by people ignorant of the character of the disease.

It has been said, that if a child, properly vaccinated, should afterwards take the small-pox, the pustules are papulous, or tuberculated, and do not suppurate, but end in desquamation. I have, however, seen a very distinct case of suppurating small-pox, in a girl who, some years before, had gone through the vaccine process in the most satisfactory manner; of which I am certain, having attended her on both occasions. I do not, from these remarks, mean to depreciate the cow-pox; on the contrary, it is only by ascertaining the precise power of vaccination, that its full benefit can be derived to mankind: and although the warmest friends of this discovery must admit, that it is not always successful, yet it has hitherto failed in so few instances, that we must consider it as justifiable to rely upon it, and adopt it in preference to the variolous inoculation. (u) Experiments have been

(u) I have heard but of a single case well authenticated, of the variolous succeeding to the *genuine vaccine disease* in this city. It happened in the practice of the late Dr. Stuart and was communicated by him to me. The circumstances of the case are so peculiar and conclusive that they deserve to be recorded. In the winter of 1805, he vaccinated a man who had the common indications of the *genuine disease*. With matter obtained from the pustule of this man, he vaccinated three children, each of whom had the disease regularly. Some short time afterwards, however, the man broke out with the natural small-pox to an alarming degree. Doubting from this occurrence that the *genuine disease* had been given to the children, Dr. Stuart immediately inoculated them with fresh variolous matter.

made, to ascertain the effects of inoculating with a mixture of variolous and vaccine matter; and the result has been, that sometimes the cow-pox, sometimes the small-pox, have been thus produced. When a person is inoculated with variolous and vaccine matter at the same time, the incisions being very near each other, the vesicles enlarging, join into one; and matter, taken from the one side, will produce cow-pox, from the other small-pox. When a person is inoculated with the two kinds of matter at the same time, or within a week of each other, both diseases will be communicated to the patient, whether the incisions be near or remote, and small-pox pustules will be produced on the body; but they seldom maturate, and the disease is generally mild. When, however, the variolous inoculation is performed more than a week, as, for instance, nine days before vaccination, the vaccine pustule becomes purulent, and sometimes communicates the small-pox even in a very bad form. When, on the other hand, variolous matter is introduced nine days after vaccination, its action is altogether prevented. From these observations, it follows, as an important conclusion, that when a child has been exposed to small-pox contagion, vaccination, though it may not prevent, will yet generally mitigate the subsequent disease.

It only remains to take notice of two objections to vaccination. The first is, that it is apt to be followed by a very sore arm. This, however, applies in a greater degree to small-pox; and in general, the vaccine sore heals, by being dusted with chalk or hair powder; and even when tedious, seldom requires any other application. The second is, that it is followed by cutaneous diseases. This, however, is seldom the case, than when the variolous inoculation was

Nothing except the local affection followed. This experiment he repeated several times with matter procured from different persons with precisely the same results. The preceding case is instructive. It teaches us not to rely too confidently on the mere appearances of the pustule. This may seem to be right, and may in reality secrete a virus capable of exciting the true disease, and yet leave the system of the individual as liable as before to the attack of small-pox. ED

performed; for then inflamed pustules and boils, with herpetic and impetiginous eruptions, frequently succeeded the disease. Doubtless, children, after vaccination, may have crusta lactea, herpes, &c. but it does not thence follow, that these are the consequences of inoculation; and it is worthy of remark, that no new cutaneous disease has been produced by the introduction of the cow-pox.

SECTION THIRTY-THIRD.

The chicken-pox is a disease sometimes mistaken for small-pox; and at one time, and by some authors, described along with it. It is preceded by eruptive fever, which continues for three days, and is marked by languor, loss of appetite, thirst, furred tongue, pain in the head, back, and limbs, sometimes pain in the epigastric region, with nausea and vomiting. The pulse is quick, the face occasionally flushed, and cough and hoarseness, may attend the disease. Convulsions also, in some cases, occur during the fever. The eruptive fever does not always go off when the eruption appears, but may continue even till the third day of the eruption. In general, however, the symptoms are mild, and sometimes exceedingly trifling. The eruption commences on the back or breast, and next appears on the face and head, which is not the order observed by the variolous eruption. Last of all, it appears on the extremities. The pustules very soon contain lymph, and by the fifth day are covered with scabs or crusts, which is earlier than happens in the variolæ. These drop off sooner than in small-pox, and very seldom leave any cicatrix. The eruption is attended with considerable itching, in consequence of which the pustules are soon broken. The pustules are seldom or never confluent, and Dr. Heberden never could count more than twelve upon the face.

In varicella, almost every vesicle, on the first day, has a hard inflamed margin. On the second or third, they are full of serum at the top; and those which are fullest of the yellow liquor, resemble small-pox pustules of the fifth or sixth day. On the third or fourth day, the shrivelled and wrinkled state

of the vesicles which remain entire, give a different appearance from the variolæ; and on the fifth day, the presence of scab assists the diagnosis.

Such is the general description of this disease; but it consists of some varieties, which have very properly been separately described by Dr. Willan, whose distinctions I shall retain. 1st, The lenticular. The eruption consists, on the first day, of small red protuberances, not exactly circular, with a flat shining surface, in the middle of which, a minute vesicle is soon formed. These, on the second day, resemble miliary vesicles, are about the tenth part of an inch in diameter, and are filled with whitish lymph. On the third day, the extent is the same, but the fluid is straw-coloured. Next day, many of the vesicles are broken; and those which are not have shrunk, and are puckered at their margin. Few are entire on the fifth day. On the sixth day, small thin brown scabs appear universally, in place of the vesicles. On the seventh and eighth days, these turn yellow and dry, from the circumference toward the centre; and on the ninth or tenth day, drop off, leaving red marks without pitting. 2d, The conoidal. The vesicles rise suddenly, and have a hard inflamed border. On the first day, they are acuminate, and contain a bright transparent lymph. Next day, they are more turgid, the lymph is straw-coloured, and they are surrounded with more extensive inflammation. On the third day, the vesicles have shrivelled, have inflammation round them; if entire, contain purulent matter, if they have burst, they are covered with slight gummy scabs. The scabs fall off in from four to five days, and often leave durable pits. A fresh crop of pustules comes out on the second or third day, and runs the same course with the first; so that the eruptive stage in this species is six days, and the last formed scabs are not separated till the eleventh or twelfth day. 3d, The swine or bleb pox. The vesicles are large and globated, but the base is not exactly circular. They are surrounded with inflammation, and contain transparent lymph, which on the second day resembles whey. On the third day, they subside and shrivel, and appear yellowish, the fluid being mixed

with a little pus. Before the end of the fourth day, they are covered with thin blackish scabs, which fall off in four or five days.

The chicken-pox is a very mild disease, and requires no other management than keeping the bowels loose, and the surface moderately cool.

SECTION THIRTY-FOURTH.

Urticaria, or nettle rash, may appear either as an acute or chronic disease.* The first is most frequent with infants and children. It is preceded by languor, sickness, and fever, on the third day of which, but sometimes earlier an itchy eruption appears, bearing a very exact resemblance to that produced by the stinging of nettles. It consists of irregular patches, slightly elevated above the surface. These are of a dull white colour at the centre, and red toward the margins, which are sometimes hard and well defined. The size and shape of the patches are very various. Generally they are about the size of a penny-piece, but sometimes form pretty long stripes. This eruption is, in some cases, attended by a slight turgescence of the skin, but especially of the face and eye-lids. The patches do not remain constantly out, but appear and disappear irregularly during the disease, which lasts for seven or eight days, including the period of the eruptive fever. When the eruption declines, the languor, stomachic symptoms, and feverishness, go off. The disease terminates by slight exfoliation of the skin. In infancy and childhood, it is often dependent on dentition, or affections of the bowels; and from the itching which attends it, great distress is produced. This febrile urticaria is not infectious, but in certain seasons it is very prevalent; and the same holds true with regard to the chronic-species. Chronic urticaria is more rare in infancy. It differs from the former, chiefly in being destitute of fever, and vexing the patient at intervals for a length of time; sometimes even for years. The patches

* Dr. Willan notices five different species of this disease; but for the present purpose, this simple division is sufficient.

seldom continue out, however, for above a few hours at a time. They are, like the former, reproduced readily by exposure to cold, and are also particularly troublesome after undressing to go to bed. A temporary eruption of this kind, without fever is often consequent to eating particular kinds of fish, or substances which disagree with the stomach. An eruption somewhat resembling urticaria, is described by Dr. Willan, under the name of *roseola annulata*; it differs in size, and some other circumstances, whilst it agrees in others. It consists of circular patches, about half an inch in diameter, the margins rose coloured, the centre of the usual colour of the skin. These cover the body, and produce, especially at night, a sensation of heat and itching. When unattended with fever, the eruption fades in the morning, and becomes round and elevated at night. The use of acids and sea-bathing will be of service.

A gentle emetic, followed by one or two purges, gives relief in acute urticaria. The child should, if possible, be kept from scratching, so as to tear the skin; and this will be the easier done, if he be preserved in a uniform temperature. The tepid bath sometimes gives relief. The chronic species is more obstinate, and, in consequence of the abrasion of the skin, from frequent scratching, it has sometimes been treated as itch, but without advantage. The bowels are to be kept open by cream of tartar, and some tonic medicine should be administered. The tepid bath, daily, will also be proper, but sometimes, sea-bathing continuéd for some months, succeeds better. Mercurials have been tried with very little good effect.

SECTION THIRTY-FIFTH.

Scarlatina may appear under two different forms. In the first, it is accompanied with inflammatory fever, and is generally mild; in the second, it is connected with a typhoid fever, and is very malignant. The first species admits of a farther subdivision, according to the degree of mildness; one variety being attended with slough or ulceration of the throat; another, still milder, with little or no affection of the fauces.

This has by some been called *scarlatina simplex*, to distinguish it from the first, or *scarlatina anginosa*.

The *scarlatina simplex* begins with a febrile attack, attended with considerable debility, chilliness, nausea, and pain in the belly and about the loins and extremities. It generally attacks very suddenly in the afternoon or evening, the patient having been, not an hour before, lively, and apparently in good health. The pulse is extremely rapid, being often 140 in the minute; the trunk is very warm, and the feet cold; the respiration frequent, irregular, and sometimes sonorous; the eye sunk, and the eye-lids turgid and red on the inside. On the second day, sometimes earlier, an eruption appears, first on the face and neck, and very soon, always within twenty-four hours, it is diffused over the whole body. It consists of numerous minute specks, so closely set together, that the skin appears altogether of a red colour, like a boiled lobster, and it feels rough. Broad patches also appear on those parts which are most exposed to heat or pressure. The inside of the eye-lids, nostrils, cheeks, and fauces, are of a deep red colour, and the tongue participates in the appearance. The eruption is most vivid at night, and especially on the evening of the third or fourth day. On the fifth day it declines, and is wholly gone by the seventh, when desquamation takes place. During the eruptive stage, the patient is generally either restless, or very drowsy, often slightly delirious, and both during this stage, and the process of desquamation, complains much of itchiness. Whilst the fever lasts, the skin is extremely hot. The contagion, in general, operates on the third or fourth day after the person has been exposed to it.

The *scarlatina anginosa* is attended with more severe symptoms. It commences with the usual symptoms of fever; and in general, whenever these appear, or even before the fever commence, the throat will be found, on inspection, to be affected; but sometimes the cynanche does not take place till the eruption come out, which is nearly about the same period as in the former species. Dr. Sims says, that the first

marks of disease are paleness and dejection of countenance, and that at this time the fauces will be found to be red. I am very much inclined to adopt the same opinion. From the first there is a sensation of stiffness about the muscles of the jaw and neck, and very soon, generally on the second day, the throat feels as if straitened, the voice becoming hoarse, and sometimes a croupy cough takes place. In this case, the breathing often becomes sonorous, or even so obstructed that the child is suffocated, as in *cynanche trachealis*. In very many cases, deglutition is performed with difficulty, and sometimes the drink returns by the nose. On examining the mouth, we find at the first, that the tongue has a very red colour, and its papillæ are evidently elongated. In the progress of the disease, it is often covered with a fur. The tonsils are early observed to be of a deep red colour, and very soon whitish streaks may be discovered. Superficial ulceration is frequent on the second or third days, and the parts become covered with white or ash-coloured substance, or slough, whilst the rest of the tonsil becomes of a dark red colour. The sloughs are sometimes not removed for a week or more, but often are detached on the fifth or sixth day, when the cuticular eruption declines. The eruption, in this variety, is the same in appearance and duration as in the former. When it is slight, or disappears suddenly, it has been said that the event is hazardous, but this is not always the case. The fever is attended often with great nausea, bilious vomiting, restlessness, head-ach, and delirium. The heat is excessive, the pulse feeble, and sometimes fluttering, always very rapid. The languor and inquietude are great, especially when the sloughs are forming. About a week or ten days after the eruption fades, anasarcaous swelling of the legs may take place, and continue even for two or three weeks. Sometimes other parts of the body swell, or the patient has ascites.

Scarlatina is sometimes succeeded by pain in the ear, followed by temporary deafness, and the discharge of fœtid serous fluid. This often abates, upon syringing the ear with decoction of chamomile for a few days; but it may be more

obstinate, and the child remain permanently deaf. Swelling of the parotid gland is not uncommon; and it is said by various authors, when it is late of appearing, to protract or renew the symptoms, even the eruption itself, but this I have not witnessed. Sometimes the glands of the neck swell and suppurate, or the bones of the nose, after obstinate ulceration become carious. I have seen some unfortunate cases, where the lips have sloughed completely away, and these ended fatally. Even after the patient has, to all appearance, recovered from scarlatina, there sometimes unexpectedly supervene, languor, debility, and pain of the bowels, frequent pulse, and loss of appetite, which symptoms terminate in dropsy. In some cases, the patient becomes languid without fever or dropsy, and these generally do well.

In the second species, or scarlatina maligna, the pulse is very small and feeble, sometimes indistinct. The debility is very great, the patient fainting on making the smallest exertion, and very generally he is unable to sit up in bed. In the scarlatina benigna, the tongue is red, the eyes and eye-lids red, the throat at first red, and the skin like a boiled lobster; but in this species, the tongue is livid, tender, and soon covered, together with the teeth and lips, with a brown or black crust, the eyes are dull, and the inside of the eye-lids dark coloured, the cheeks are livid, the throat of a dark red colour, with brown or blackish sloughs; there is fœtid breath, with acrid discharge from the nostrils. The inside of the labia pudendi of girls, and of the prepuce of boys, has in scarlatina the same colour with the inside of the cheeks and lips; in the scarlatina maligna, the vulva and lips are of a dark colour, and sometimes mortify. The eruption is sometimes faint, in other cases very dark and purple coloured, and often appears and disappears irregularly. In the progress of this disease, delirium, great fretfulness, or coma may come on. The breathing is rattling, the neck seems to be full, and of a livid colour, and the head is bent back. This disease sometimes proves fatal in a few hours. It is not, however, always alike mortal, for there are several smaller degrees of malignity, forming a gradation betwixt this and the scarlatina anginosa.

The first species, when properly managed, is not very dangerous, but the last is attended with great hazard. The prognosis must be made, by attending to the symptoms of debility, the progress of the affection of the throat, the tendency to inflammation of the trachea, and the general character of the epidemic.

Drs. Withering, Adams, and Willan, believe, that the scarlatina does not attack the same person twice, though the throat may be to a certain degree repeatedly affected. Although I have had many opportunities of attending to this disease, I cannot form a decided opinion on this important point; but I am rather inclined to adopt the same conclusion. Aphthous affections of the throat, and exudation of lymph from inflammation, are often considered as belonging to scarlet fever, though the eruption be absent, but the conclusion is incorrect. Those who are exposed to the contagion of scarlatina, may have sloughs in the throat, attended with considerable debility, but a regular repetition of the scarlet fever is certainly not a frequent occurrence. Sometimes other eruptive diseases, such as roseola infantilis have been taken for it.

The scarlatina simplex and anginosa, are often so mild diseases, as to require little medicine, but still great attention is necessary. When there is a considerable appearance of inflammation, venesection has been recommended; but this is very seldom necessary, often hurtful, and may almost uniformly be superseded by other means. Emetics, given early, are often attended with advantage, and render the subsequent disease milder. But laxatives are still more useful, and in mild cases are the only medicines which are required. In some epidemics, the bowels are moved with greater difficulty than in others, and in those cases the laxative must be stronger. Even when there is a tendency to diarrhœa, if the stools be fœtid and unnatural in their appearance, purgatives are equally necessary as in the opposite state. The best medicine to be given at first, is calomel in a brisk dose, which often, even at the commencement of the disease, brings

away fætid stools. This medicine cannot be used too early; and if an emetic have been given, calomel ought rapidly to succeed it. After the operation of the first dose of calomel, the bowels must be kept open, or even rather loose, by the daily use of infusion of senna with an aromatic. This is better than repeated small doses of calomel, which often affect the mouth considerably. But if the stools be very fætid, the patient oppressed, and the belly full, a brisk purgative may be given oftener than once in the course of the disease. Another remedy of great importance, is affusion with cold water. From careful observation, I can with great confidence recommend this remedy, which by no means prevents the exhibition of purgatives at the same time. It is of consequence to use this early, and whenever the patient feels steadily hot, the shivering have gone off, and the skin feels very warm to the hand of another person, it is time to put the patient into an empty tub, and dash over him a large pail-full of cold water. By this I have known the disease arrested at once, the eruption never becoming vivid, and the strength and appetite in a few hours returning. Even where it is not arrested, it is pleasant to observe the change it produces. The patient, from being dull, languid, and listless, feels brisk, and disposed to talk or laugh; the skin becomes for a time colder, and refreshing sleep is frequently procured. The repetition must depend on the degree of heat; often it is necessary the first day to use it three times, and next day once in the morning, and again in the evening. It is seldom necessary to use it afterwards, for although the disease may continue, it is mild, and laxatives complete the cure. Even an advanced state of the disease, if the bath have not been previously employed, and the skin is hot, does not preclude its use. On the contrary, it revives the patient. These two remedies not only mitigate the disease, but lessen the risk of dropsical swelling taking place afterwards. Gargles are often useful, when they can be employed. Water, acidulated pretty sharply with muriatic acid, or mixed with capsicum vinegar, forms a very good gargle. Acid fruits are proper. The diet

should be light and nourishing. In mild cases, it is not necessary to give wine; but if the debility be obvious, small doses of wine may, toward the end of the disease, be administered. Should anasarca take place, laxatives and diuretics, such as digitalis, are proper.

The scarlatina maligna is much more dangerous, and requires the most vigorous practice.* The early use of the cold water is highly proper, and often gives a favourable turn to the future disease. Laxatives are likewise necessary, and so far from weakening the patient, if prudently administered, seem to increase his strength. Wine should be given, in such doses as do not flush the patient, or make him hotter. Ammonia is sometimes of benefit. Two drachms should be dissolved in six ounces of water, and the solution sweetened with sugar. To infants, two tea-spoonfuls, and to older children, from a desert to a table-spoonful of this solution, may be given every two hours, or oftener if possible. An infusion of capsicum vinegar is also employed with advantage; so much of it is to be added to a given quantity of water, as renders it pungent. This mixture may be given in the same doses as the solution of ammonia, and it both acts as a general stimulant, and as a local application to the throat. Bark has certainly, in many cases, been of service; but in general, children do not take it in such doses as to do much good; or they loath it or reject it by vomiting. Even when taken freely, I do not think that it is a medicine that can be depended on, in the cynanche maligna of children. When it is prescribed, it ought to be combined with ammonia or capsicum. Myrrh has also been given, combined with vinegar; but of the effect of this, I cannot speak from my own observation. Oxygenated muriatic acid in doses of twelve drops to children, has been employed; but I question if it produces better effects than water acidulated with sulphuric acid, which,

* Dr. Hieglitz recommends in scarlatina, first, an emetic of ipecacuanha, and then so much epsom salts as shall procure four stools. In bad cases, he gives four grains of calomel daily, or rubs in ʒss of ung. hyd. Whenever the salivary glands become affected, the disease, he says, takes a turn

if the ammonia be not employed, makes a very proper drink. If the patient, at an advanced period, be restless, and the skin dry and rough, ablution with tepid water will be useful. As gargles, capsicum vinegar with water, or muriatic acid with honey and water, may be employed; but as children often cannot, or will not use gargles, it may be useful to throw these on the tonsils with a syringe. It is also proper to touch the sloughs and tonsils frequently, with a pencil dipped in the tincture of myrrh or camphorated spirit of wine. Fumigations, made by pouring sulphuric acid on nitre, placed in a vessel in the bed-room, have also a good effect on the throat. When the sloughs are large, or the child breathes with difficulty, or has a croupy cough, a gentle emetic of ipecacuanha sometimes does good, and ought to be tried. It is to be followed, if the child be a year old, by two grains of calomel every hour, till stools are procured. If less than a year, one grain may be given at a time. Blisters have also been applied to the throat, but I really cannot say decidedly, that they do good, and they add greatly to the irritation of the child.(x) In bad cases, there is risk of their being followed by mortification of the part. Sometimes, in the course of this disease, apoplexy succeeded by hemiplegia, and inability to articulate distinctly, takes place. Blisters should be applied to the head, and if the patient survive, the paralytic symptoms go off in a few weeks.

When a disease of this kind appears in a family, the children who are unaffected, ought if possible, to be sent away, and should not return for a month. In the mean time, the clothes should be washed, and the apartment well ventilated, and fumigated with the vapour of oxygenated muriatic acid. This fumigation may be employed, even during the disease, for the destruction of the contagion, and of the smelling matter in the room.(y)

(x) Where the throat has been much affected, I have certainly derived advantage from the application of blisters. ED.

(y) Whatever may be the effect of this kind of fumigation in destroying contagion, of which, however, I have some doubts, it could hardly be resorted

SECTION THIRTY-SIXTH.

Measles commence with a distinct eruptive fever, on the first and second days of which, the patient complains of irregular shiverings, alternating with heats, general debility, languor, loss of appetite; has white tongue, thirst, pain in the back and limbs, slight sore throat, hoarseness, with dry cough and sneezing, weight and pain across the forehead, giddiness, drowsiness, frequent and irregular pulse, costiveness, and high coloured urine. On the third or fourth day, the symptoms become more severe; the eyes are tender, watery, and appear as if inflamed, the eye-lids are often swelled, the nostrils discharge thin serum, and the patient sneezes more frequently. There is now often some degree of dyspnœa, and sometimes pain and tightness in the chest. These febrile symptoms usually come on distinctly, about twelve or fourteen days after exposure to infection; but I have known children seized more gradually, being teased with hard cough, and rendered more irritable and fretful for many days before the eruptive fever commenced. The eruption appears betwixt the third and sixth day of the fever, but most frequently on the fourth. It is first visible on the forehead, then on the throat, then on the face. Next day it appears on the breast, and by the evening it covers the trunk and extremities. The eruption consists at first of small red spots, apparently a little raised, like papulæ, but without vesicular tops. Then the spots extend so far as to form an oval or irregular figure, slightly elevated, but flat, resembling a flea bite. Very soon large patches appear, intermixed with the distinct spots. These are irregular in shape, but tend to the semilunar figure; they are made up of clusters of the distinct spots. In some cases the eruption, though vivid, is not considerable; and in this case, it consists almost equally of patches and circular and irregular spots, and the intervening skin is of the natural

resorted to in these cases. The vapour is so exceedingly irritating and offensive to the respiratory organs that we can scarcely, even when in health, remain in a room above a few minutes which is filled with it. ED.

appearance. When the eruption is more copious, the patches are most numerous and extensive. In children under a year old, the eruption is not so thick and confluent as in older subjects, and in many places has a papulous appearance, especially on the face and hands. In some cases the eruption, though of the usual configuration, is pale and indistinct; but in general, whether vivid or not, when the finger is passed over the surface, the skin feels unequal, from the elevation of the spots and patches. The colour is most vivid after the eruption has been out for a day. Sometimes the eruption suddenly and prematurely recedes, or never comes fully out. Both of these cases are unfavourable, the fever is high, and the oppression great. In the regular course of things, the eruption on the face fades a little on the sixth day, and next day that on the body becomes also paler.* From this to the ninth day, the eruption is going off, and then the former situation of the rash is only marked by slight discolouration. The departure of the efflorescence is attended with desquamation, during which, the patient complains much of itchiness. The fauces in this disease, about the fourth day, are covered with small red patches, which next day have a scattered or streaked appearance. The inflammation of the eyes, sneezing, and hoarseness, generally decline with the eruption, and, towards the end, epistaxis sometimes takes place. The fever continues during the eruption, but the sickness and nausea abate when the eruption comes out, and about the sixth day the heat and restlessness go off. A spontaneous diarrhœa often terminates the fever, and then the appetite returns pretty keenly. Sometimes, especially if the disease have been severe, the measles are followed either by an eruption of inflamed pustules† over the body, which may ulcerate, and prove

* Sometimes, instead of this, the eruption becomes very dark coloured, or purple, with increase of the languor and fever. Mineral acids in this state are useful, and most children recover. The danger is greater when petechiæ appear among the patches, for this marks great debility.

† These are sometimes taken for a kind of small-pox. They are occasionally succeeded by a scabby disease of the skin. The skin is inflamed and covered with rough loose yellow scabs.

troublesome, but more frequently they fade, or by a vesicular herpetic-looking eruption about the mouth, or sometimes by gangrenous affections of the lips or vulva,† or by enlargement of the glands of the neck, or dropsy, or a cough, somewhat resembling that in whooping-cough, or by hectic fever, continuing for many weeks.*

Rubeola, in general, is not a fatal disease, when stimulants are avoided. When it proves fatal, it is most frequently in consequence of the pulmonic affection, sometimes of coma, or fever and oppression, with symptoms of effusion in the brain, connected with recession, or imperfect appearance of the eruption.

The treatment is extremely simple, and may be briefly explained. During the eruptive fever, the use of mild diaphoretics, and the tepid bath, will be of advantage. The bowels should be kept open, but the child should not be purged after the first day. If there be a considerable diarrhœa from extraneous causes, as dentition, or directly connected with the fever, it is often found that the eruption is late of appearing, and a late eruption is generally attended with some troublesome symptoms. A little rhubarb, given early, often moderates this.

† The measles, last year, were more prevalent than any practitioner I have met with remembers them to have ever been before. They began about the middle of winter, and continued during the summer and autumn. I have had occasion, during this epidemic, to see different instances of the gangrenous affection I have mentioned. The children all belonged to the poor, and lived in confined houses.

* I have not advised the liberal use of purgative medicines, though these are found beneficial in scarlatina, because we often find that diarrhœa interferes with the eruption. But the bowels are upon a general principle to be kept regular, or rather open; and if the stools be fetid or ill coloured, then, even although diarrhœa exist, small doses of calomel should be given, and afterwards, if necessary, the purging is to be moderated by anodyne clysters. So far as I have observed, the continuance of the diarrhœa in this case, does not mitigate the symptoms; and if the child recover, it is either by the use of medicines bringing the bowels into a better action, or it is independent of the mere evacuation produced by the diarrhœa.

If the eruption do not come freely out, or recede prematurely, and the child be sick, oppressed, and breathe high, we must attend first of all to the bowels. If diarrhœa exist, and the child be not plethoric, a little rhubarb should be given, and then spiritus ammoniæ aromaticus with laudanum, and the child should be put in a warm bath, having a little mustard diffused in it; afterwards a warm plaster should be applied over the stomach, and we determine to the surface by giving a saline julap. If in this state the child be costive, a gentle purgative should be given, for the bowels may be either too torpid or too irritable.

If the pneumonic symptoms be considerable, marked by cough, oppressed breathing, flushed cheeks, and pain in the chest, which, in young children, may be discovered by the effect of coughing, and if a slight motion excite coughing, a blister should be applied to the breast; and if the child be robust, or the symptoms urgent, either one or two leeches may be applied at the top of the sternum, and moderate doses of calomel should be given, if necessary, to keep the bowels open. If the cough be frequent, without inflammatory symptoms, opiates give great relief; and if there be no diarrhœa, the acetum scillæ may likewise be given. Diarrhœa should not be checked, unless severe, and it increases debility or produces other hurtful effects. Anodyne clysters are the best remedies.

Coma or drowsiness very frequently attends the measles, and the child may perhaps scarcely look up for some days. When the nostrils are stuffed with mucus, the breathing, in this case, has an alarming appearance of stertor. Most children recover from this state; but as some die evidently from this cause, and as we have no means of ascertaining the security of any individual, I hold it expedient to use means for the removal of the coma, particularly by giving a purge, if the child have not a looseness, and shaving the head, and afterwards applying either a sinapism or a blister. When the child is plethoric, it may also be proper to apply leeches to the forehead.

The cough which remains after measles, is generally relieved by opiates. Hectic fever is often removed, by keeping the bowels open, giving an anodyne at bed-time, carrying the child to the country, and adhering to a light diet. Other symptoms are to be treated on general principles.

When the measles are epidemic, it is not uncommon to find those who had formerly the disease, affected sometimes with catarrh* without any eruption, sometimes with an eruption preceded by little or no fever, and without any catarrh. This has been very distinctly observed, during every season when the measles were prevalent. Whether the eruption be of the nature of measles, it is not easily determined, but certainly the external resemblance is very great, in so much that this eruption has been called *rubeola sine catarrho*. It requires no particular treatment, and is only noticed because it is sometimes taken for measles, but does not prevent the patient from a second attack.(z)

SECTION THIRTY-SEVENTH.

Sometimes an eruption, termed by Dr. Willan, *roseola*,† is taken for measles. The first species, *roseola æstiva*, has

* During the epidemic of the last year, ophthalmia has been extremely prevalent amongst both young and old.

(z) Of all the eruptive diseases the measles are undoubtedly the most inflammatory. They therefore require to be treated by depletion. Bleeding, even pretty copiously, can rarely be dispensed with. I speak now of the disease as it appears in this country. To this remedy may also be added occasionally purging with the neutral salts, and the antimonial preparations with a view not less of diminishing arterial action than overcoming the stricture on the surface of the body. The whole antiphlogistic plan is indeed to be pursued. If there be much local affection either in the lungs or head, blisters should be employed. Change of air, especially by removal to the country will be found most speedily and certainly to subdue those distressing effects which too often follow the disease, such as diarrhœa, cough, &c. E.D.

† This he defines to be a rose coloured rash, without scales or papulæ, variously figured, and not contagious. By some former writers, this term is applied to a disease resembling nettle-rash. Vide Lory, p. 393.—The appearance of *roseola æstiva* is extremely well expressed by Dr. Willan in his plate

no small resemblance to rubeola. It is often preceded by chillness, alternating with flushes of heat, languor, faintness, restlessness, &c. At some period, betwixt the third and seventh day from the commencement of these symptoms, the rash appears, generally first on the face and neck, and afterwards in a day or two over all the body. The patches are larger and more irregular than those of the measles,* in which the eruption consists of spots like flea bites, and patches made up of these spots, arranged sometimes in a crescentic form, and of a colour seldom deeper than bright scarlet, often much paler. In this disease, however, the eruption is at first red, but in general it soon assumes a deep roseate hue, from which Dr. Willan gives its name. The fauces are tinged with the same colour, and the patient feels a slight roughness in the throat. The eruption appears first at night, and continues vivid next day, with considerable itching. On the fourth day, only slight specks of a dark red colour are observable, which next day disappear, and together with these the internal disorder. The drowsiness, sneezing, watery eyes, and running at the nose, so common in measles, are wanting in roseola, and there is no pulmonic complaint, whilst, at the same time, the patches are larger, and occasionally intermixed on the body with an appearance of nettle-rash. Sometimes the rash is only partial, appearing in patches, slightly raised above the surface, with a dark red flush of the cheek. This form lasts about a week, the rash appearing and disappearing occasionally; and usually the disappearing of the rash is attended with nausea, faintness, &c. In some cases, no fever is observable, or the progress and duration of the eruption is more irregular than I have described; and sometimes on the breast or trunk, the eruption has a great resemblance to urticaria, whilst on the arm, the appearance is decidedly like roseola. The only treatment which is necessary, is giving gentle laxa-

* Sometimes young infants have an efflorescence of numerous coalescing patches, of a strong red colour, rounded, and of the size of a sixpence. These terminate in desquamation in less than a week.

tives, the use of acids, and light diet. If the eruption be suddenly repelled, the warm bath is proper.

Another species, called *roseola autumnalis*, affects children generally in the harvest, and consists of distinct patches, of an oval or circular shape, which increase to nearly about the size of a shilling; they are not elevated, but are of a very dark colour, appearing at a distance, as if a black cherry or brambleberry had been pressed on the skin, so as to leave the impression. The patches are not attended with fever, are usually diffused over the arms, and disappear in about a week. Acids may be taken internally.

The *roseola infantilis* appears during dentition, or in a disordered state of the bowels.* It consists of a red efflorescence, usually very closely set, so that the surface is almost entirely of a red colour, as in *scarlatina*; but there is more appearance of patches than in that disease, and the other symptoms are wanting. The eruption generally goes off in a day, but it sometimes appears and disappears for several days with symptoms of great irritation. No particular treatment is necessary, except what is required on account of concomitant circumstances.

* *Roseola infantilis* is sometimes preceded or attended by vomiting or convulsions, accompanied with pale face and languor. A gentle emetic is useful, and then the warm bath and some cordial medicines.

CHAPTER V.

Of Hydrocephalus.

HYDROCEPHALUS is one of the most dangerous and insidious diseases to which children are subject. It sometimes makes its attack suddenly, cutting the patient off in a few days; sometimes more gradually, and is protracted for many weeks or months. It has, therefore, been divided into the acute and chronic; and as it may either appear as an idiopathic disease, or come on in the course of other diseases at first quite different, it may likewise be distinguished into the primary and secondary.

Acute hydrocephalus begins very like a common fever, but there is more frequent vomiting, and greater pain in the head, especially on one side; whilst in most other fevers of children, the greatest uneasiness is generally felt in the belly, the head being often unaffected. After the febrile symptoms have continued for some time, marks of oppressed brain appear, and the patient dies comatose, or convulsed. Such is the outline of the disease, which, however, it will be necessary to describe a little more minutely. Very often the patient, for some time previous to the attack, is languid, peevish, and uncomfortable, without any particular complaint. The appetite is impaired, he has frequent sick fits, or vomits bile, and the bowels are generally very costive, though sometimes he purges fætid dark coloured or green fæces. Towards evening, the face is a little flushed, and the skin is hot, and very soon the disease becomes formed. In other instances, however, and these by no means unfrequent, the disease invades more suddenly, or with scarcely any previous indisposition. The patient feels chilly, whilst his skin is hot; he complains greatly of his head, especially at the forehead, or at one side, sometimes very much of his neck. He cannot keep out of bed, his eyes are very sensible to the light, and, when examined, the pupils are contracted, sometimes irre-

gularly, and the eye in some cases is troubled, in others as clear as usual. The head-ach is constant, and produces moaning, or the patient lies silent and unwilling to speak a word, or often even to take a drink. The stomach is very early affected, and for some days he vomits bile, and whatever he swallows; has no appetite and little thirst; the tongue is white, the bowels generally costive, but sometimes loose, and the stools in that case green and fœtid; pain is felt in the belly, and occasionally in other parts of the body. The sleep is broken, and frequently interrupted, as if the patient had a frightful dream; he starts, grinds his teeth, and picks his nose, which makes the disease sometimes pass for the consequence of worms. The pulse, in a few cases, is not very frequent; but in general, especially if the disease be rapid, it is at first very quick, being about 120 in the minute. In about eight or ten days, the pupils become somewhat dilated, the patient squints a little. In some cases the vomiting is renewed, but more frequently it is not. The pulse becomes slow, beating only 60 in the minute, and being often irregular. The pupil becomes more dilated, and the eye less sensible than formerly to light. The head-ach is usually diminished, but the patient frequently cries out, or even screams. In some cases delirium comes on; in others, the patient continues sensible and intelligent, until the stupor supervene. More food is often taken, in this stage, than formerly. In the course of either two or three days, the pulse becomes again quicker, the pupil more dilated; but still the patient may continue to see, and complain of the light, and often answers distinctly every question. Presently, however, the symptoms of oppressed brain become greater, the pulse is weak, and gradually increases to 160 in the minute. The eye squints, vision is at last lost, the urine is either retained, or passed with the fæces involuntarily. The breathing becomes stertorous, and the patient dies. In the course of this malady, the cheeks are alternately flushed and pallid; and after the second stage, one side is more or less paralytic, whilst the other in many cases is convulsed. The symptoms are generally aggravated during the night. When the patient sleeps, the eye-lids are often

only half closed, and the eyes turned up. He complains much, or becomes giddy, when the head is raised.

This disease runs on generally till the twenty-first day, if the patient be above two years old; but if the child be younger, it often terminates more speedily, sometimes so early as the fourth or fifth day. (a)

From this account, it appears that the symptoms, when the patient can describe them, are in the first stage much the same with those of the common fever of the adult, or many of the febrile diseases of children, and that upon these supervene those of oppressed brain. In some cases, however, water has been found in the ventricles, when no symptoms indicated it during life,* or when many of the usual symptoms were absent.†

Infants cannot give an account of their sensations, and therefore we are more uncertain, until the symptoms of oppressed brain appear. We may, however, dread the nature of the disease, when the infant has a high fever, vomiting, with costiveness or diarrhœa, lies oppressed, and apparently sick, with the eyes obstinately shut, dislikes the light, puts the hand frequently up to the temples, as if going to rub something off the head, has starting and spasms, and awakes suddenly as if terrified, and sucks or drinks at first with great rapidity. The diagnosis, it must however be confessed, is very difficult; for in disorders of the bowels, from dentition

(a) It is not at all uncommon in hydrocephalus at the expiration of eight or ten days, especially if its progress has been rapid, for the more violent symptoms to subside so as to induce a very sanguine expectation of a speedy recovery. This is often a most treacherous and fatal calm, as it results from an effusion in the ventricles of the brain. The vessels in this way become relieved, and the disease is suspended. After a short time, however, the extraneous fluid acts as a reexciting cause, and the disease returns with redoubled force. Under such circumstances, it is perhaps incurable. Effusions in other cavities of the body may be taken up, but as far as we know, the ventricles are destitute of absorbents, or if they exist, they act incompetently in these cases. ED.

* Vide Quin's Treatise, p. 43.

† Dr. Rush mentions cases where there was no pain in the head, or where it began like a catarrh, or wanted the strabismus, dilated pupil, sickness, and loss of appetite. Med. Inq. Vol. II. 210.

and other causes, spasms, starting, drowsiness, and strabismus, may take place.* It is perhaps prudent, whenever there is much fever, with any ambiguous symptoms, to proceed as if the patient were threatened with hydrocephalus, more especially, as the early use of the remedies thus indicated will generally be serviceable in the complaints with which this disease may be confounded; and if we delay, till the last stage, to obtain a more certain diagnosis, we have scarcely any hope of doing good. When children can give an account of their sensations, we may with great justice fear this disease, when they complain much of the head, have vomiting, and quick pulse.

Dissection shows that the vessels of the brain are full of blood, some of them very turgid, the membranes and brain in some places seem inflamed, and covered with coagulable lymph; whilst betwixt the dura mater and the brain,† but still more frequently in the ventricles of the brain, there is an accumulation of water, sometimes to the extent of several ounces, and it is generally of a very pure and transparent quality.

Hydrocephalus is produced by causes, the operation of which cannot always be detected, but sometimes it can be traced to the sudden removal of an eruption, or cutaneous discharge from the scalp, blows on the head, &c. A scrofulous constitution appears to give predisposition to the disease. The term hydrocephalus is, perhaps, in one sense improper, as it expresses merely a symptom occurring in the end of the disease, and which does not exist whilst the disease is curable. No one thinks of calling pleurisy, empyema, though that is a termination of pleurisy; it would be apt to

* A very interesting case, where strong symptoms of hydrocephalus were produced by accumulation of fæces, and a speedy cure obtained by purging with senna, is related by the late Mr. Benj. Bell.—Hamilton on Purgatives, p. 217.

† In this case the disease is called *hyd. externus*, to distinguish it from the species in which the water is in the ventricles, which is called *hyd. internus*.

call the attention of the practitioner to a different set of indications from those pointed out in the inflammatory stage. (*b*)

The most proper treatment would seem to consist in the early application of leeches to the temples, and purging the patient with calomel; after which, the bowels are to be kept rather loose. These means should always be had recourse to on the very first attack of the febrile state, and in many cases, will effectually check the progress of the disease, and prevent effusion. But if they do not immediately give relief, the head should be shaved, and a blister applied. If the patient has a diarrhœa instead of being costive, it ought not to be rashly checked; but if the stools be green, fœtid, or contain lumps, small doses of calomel should be given repeatedly. In the second stage, mercury combined with digitalis should be used freely, and repeated blisters applied to the head, so as to keep up a discharge. If the spasms are very frequent, opiates may ultimately be employed, as they will, at least, render the appearance less distressing to the relations.

When hydrocephalus is known to be a family disease, it will be proper to use every mean to strengthen the constitution, such as the cold bath, light nourishing food, and strict attention to the bowels. If the child be plethoric, the bowels should be kept loose, and a small issue may be inserted. We should be particularly careful not to heal too suddenly any eruption, especially about the head. The first symptoms of disease must be watched; and we had better be blamed for using remedies too early, than have to regret that we employed them too late.

(*b*) This is a correct distinction. The proximate cause of the disease, or indeed the disease itself, is an increased action of the vessels of the brain: the proximate effect, an effusion of water into the ventricles. By confounding the disease with the effect, practitioners have given very opposite and contradictory reports respecting the powers of medicine in curing it. By bleeding, purging, cupping and blistering, we can undoubtedly often cure the *disease itself*, but, when effusion has taken place, it may be deemed generally a *desperate case*. We should, therefore, endeavour to relieve the blood vessels by the most active depletion so as to prevent effusion. It is now more than thirty years since Dr. Quin pointed out not only the *correct theory*, but also the *proper practice* in this disease. His valuable treatise on the subject cannot be too often consulted. Ed.

The chronic hydrocephalus makes its attack more slowly, and runs its course with much less speed. It seems sometimes to be gradually approaching from birth, the child being dull, languid, subject to frequent fits of stupor or drowsiness, and the head enlarging faster than it ought to do. In other cases, the child is at first tolerably healthy, and it is many years before symptoms of the disease appear. First of all, we observe him to be duller than usual, with a slight degree of fever, attended with pain in the head, sometimes constant but moderate, sometimes attacking like paroxysms of head-ach, attended with sickness and vomiting. He is amused for a short time with the entertainments of his age, but is soon tired, and generally is found, after a little play, lying in a chair. The appetite is gradually impaired, and his food is apt to sicken him, or be rejected by vomiting. The headach becomes more constant, and sometimes severe, often attended with giddiness, and pain or stiffness in the neck. The skin is rather hot, the pulse at first is frequent and irregular, though in some instances it very early becomes unusually slow, and continues so for a long time. The bowels are constipated, the urine sometimes passed with pain and difficulty. The eye is dull and languid, and at times the patient sees double or indistinctly. After these symptoms have continued some time, the bones of the head enlarge greatly if the sutures have not united, and the veins on the scalp become very distinct. The body wastes, and the muscular powers are more or less impaired. In this state, the patient may live many months; or occasionally the disease seems to receive a check, and the patient lives for years with an enlarged cranium, and sometimes in a state of idiotism. In general, however, in a few weeks, or at most a few months, the symptoms of compressed brain become more distinct. The pupils are dilated, the patient squints, the limbs are paralytic and convulsed, the urine is suppressed, so that the catheter is required, the pulse full and slow, but presently it becomes weak and fluttering, and the patient dies comatose, with stertorous breathing. When the patient can give an account of his sensations, we may early be led to suspect some dis-

ease in the head, but in infancy we can receive no account of the sensations. We may discover it, however, by the unhealthy look of the child, the frequent application of the hand to the head, the size and weight of the head, which are greater than usual, even before water be formed; drowsy fits, and sometimes convulsions; vomiting, and awaking terrified from sleep; at the same time that there seems to be no tendency to dentition. Afterwards the size of the head, and other symptoms, indicate the disease more decidedly.*

On opening the head, we generally find a great quantity of water in the ventricles, and some even on the surface of the brain. Sometimes the ventricles are so much enlarged, that the cerebrum resemble two vesicles pressing on the cerebellum. The bones of the cranium are sometimes very thin and softened, sometimes very irregular on their inner surface. In a girl who died, after having been ill for about five months, I found the inside of the cranium, at the lower part, covered with sharp bony processes or spines.

The practice consists in the application of blisters to the head, or the formation of an issue on the scalp by means of caustic. The bowels are to be kept open, or at least regular, by the use of purgative medicines; and it will be proper to give a course of calomel or mercury, combined with digitalis, nearly in the same dose we would use for dropsy. By this plan, some children are cured, and others have the head reduced in size for a time.† These have the urine consider-

* There is an affection, which is liable to be confounded with chronic hydrocephalus. The patient complains of his head and neck for a length of time, has the pain increased by exercise, agitation, or reading long, and sometimes he squints. The pain, however, is rheumatic, follows the course of that disease, is not constant, and shifts its place. The squinting is either habitual, and consequently accidental with regard to the disease, or it is caused by a temporary affection of the muscles of the eye, and is increased by looking long at any object. The patient is easily agitated, and, at a more advanced age, would be said to be hysterical. Laxatives, bark, and sea bathing, are useful.

† In a case attended by my brother, he succeeded so far with the mercury and digitalis, as to render the fontanelle slack, whereas, before, it was tense and prominent. But whenever this slackness was produced, convulsions came on, and the patient died.

ably lessened in quantity; and when the medicines do good, they increase the flow of urine. It has been proposed, by bandages or other means, to support the bones of the head, and prevent distension, but of this I can say nothing from my own observation.

The secondary hydrocephalus is a very frequent disease, and is extremely insidious. The symptoms at first are quite independent of any affection of the head, and arise from dentition, disorders of the bowels, or other causes. But in the course of the disease so excited, especially if it be attended with fever, symptoms, indicating a diseased state of the brain, supervene with more or less celerity. That this should take place is not wonderful,*when we consider the remarkable sympathy existing betwixt the brain and other organs, and the great vascularity of the brain, as well as its delicacy in children. But however the fact is to be explained, its existence is undoubted. It is unfortunate, that the first set of symptoms often fix the attention of the practitioner solely to the cause which is supposed to produce them, whilst the new disease is overlooked until all hope is at an end. It is highly necessary, in all diseases of children, to watch the safety of the head; and whenever symptoms appear, indicating an affection of that organ, to have recourse to the application of leeches, blisters, and other means, which have been pointed out. Indeed, in all protracted diseases of children, especially if attended with considerable fever, it will be prudent to shave the head, and apply a small blister upon it. Calomel purges are of great utility.

CHAPTER VI.

Of Convulsions.

CONVULSIONS proceed from various causes during infancy. They very frequently arise from irritation in the bowels, from dentition, or in the course of eruptive fevers. Sometimes they proceed from immediate affections of the brain itself, and very often they occur in hydrocephalus. They may be distinguished into those proceeding from a primary affection of the brain,* and those occasioned by sympathy with some other organ in a state of irritation. It is not, however, easy to make the diagnosis in every instance; and when convulsions continue long, whatever may have been their origin, the brain ultimately suffers; and if the disease be protracted, the patient becomes emaciated, and perhaps paralytic, or even hydrocephalus may very early be excited.

We may be assisted in our judgment, by examining the gums, especially if the child be about the time of life when teeth appear; by inquiring into the state of the bowels, whether they be loose or bound, or the child be troubled with worms; by learning if an eruption has suddenly disappeared: or if the child has been frightened or had heavy food, or too much food, or been sucking a woman whose mind had been recently agitated; or if none of these causes be discovered, we should inquire if the child has already had those febrile eruptive diseases, which are often preceded by convulsions, especially small-pox.

Very young infants are subject to a slight degree of spasms called inward fits, in which the mouth is, during sleep, drawn into a smile; the eye-lids are not quite closed, and the eyes are turned about, so as at times to discover the

* An epidemic convulsion is mentioned as prevailing at one time in Paris, affecting children under eight years of age, and young whelps, in which blood was constantly found effused under the cranium. It proved fatal in seven hours. *Recueil Period.* tom. IX. p. 286.

white; the breathing seems occasionally to flutter, and the child is very easily startled. These fits appear to be occasioned by wind in the stomach or bowels, for they are relieved by a discharge of wind, and require some carminative, such as sugar of anise, with a gentle laxative. They generally go off in a short time, but sometimes they are succeeded by vomiting or purging, or drowsiness, ending in convulsions. (c)

Some children, very early after birth, appear languid, moan, and pass dark coloured fæces, different from meconium, and after it, in the usual course of things, ought to be removed. Presently they fall into a state, rather resembling syncope than convulsions, and die perhaps in forty-eight hours after they are born. The early use of calomel, in small doses, conjoined with some gentle aromatic, is proper. (d)

Regular convulsions may occur at a very early period of infancy, and in this case attack those children who, from the time of birth, have been subject to heavy sleep, or to whine and moan, or start suddenly from their sleep, and who have twisting of the extremities while awake.

(c) Dr. Armstrong was the first I believe who called the attention of physicians to this complaint. He has written very elaborately upon it, and deems it much more formidable than it is commonly represented to be. Where it is neglected, he says, "it will degenerate into an almost constant drowsiness, which is succeeded by a fever and thrush, or else it terminates in vomitings, sour curdled or green stools, the watery gripes, and convulsions." The antimonial wine given as an emetic is the chief remedy which he has suggested.

Notwithstanding the preceding frightful picture, I cannot help considering "inward fits" as a very trifling sort of complaint, too trifling, indeed, to get a place among the diseases of infants. That very young children often exhibit the symptoms described by Mr. Burns is undoubtedly true. These, however, will be found to proceed from uneasiness, the consequence of an overloaded and distended stomach. The mild carminatives will generally give relief. But if they fail, the stomach must be emptied by a puke or purge. It is better however to prevent this complaint altogether by a proper regulation of the child's diet. ED.

(d) At this very early stage of life, I would prefer purging with castor oil to calomel. ED.

Convulsions vary much in their degree and duration. Generally the child is seized quickly with a spasm of the muscles of the arm and legs, which are agitated to and fro, the fists are clenched, the body bent back, the features distorted, the eye-lids open, the pupils dilated, and the eyes either fixed in the socket or rolled about. The face is either pale or livid. These convulsions may prove very suddenly fatal; but sometimes after the fit has lasted a minute or two, it goes off and does not return. In other cases, it returns very frequently for several days, or at uncertain intervals for many weeks. In general, the longer the fits, and the shorter the interval, the greater is the danger. The occurrence of paralytic symptoms or emaciation, in those cases where fits are frequently repeated, adds greatly to the danger.

When a child is seized with convulsions, a very great alarm prevails; and it is expected, that if the practitioner arrive before the child is carried off, or has recovered from the fit, very prompt and active means be employed. The first thing to be done, is to order a warm bath and a glyster to be got ready immediately; and while these are preparing, we inquire into the circumstances of the case, and examine the gums. If the child be at the time of teething, and no other cause be discovered, it will be proper to cut the gum freely over that part where the teeth ought, according to the usual order of dentition, to appear, even although no swelling be discovered. Then the child is to be put into the warm bath, the face alone being kept above the water, and he is to be retained there for a few minutes, if the fit do not pass off sooner. When the child is taken out of the bath, a cloth is to be applied over the stomach, or great part of the abdomen, wet with strong spirits, and lightly sprinkled with pepper. If the child have no diarrhœa, a clyster is next to be thrown up, so as to operate speedily; and this is to be followed by a calomel purge, and the subsequent use of laxatives, to keep the bowels open. Even if the child has diarrhœa, if the stools be not natural in appearance, laxatives will be proper, according to the directions

given in considering diarrhœa.* Emetics have also been employed during the fits; but unless we have reason to suspect that some indigestible or improper substance has been taken, they will not be so beneficial as laxatives. But when fits are only apprehended in dentition, from starting, feverishness, and circumstances ascertained by former experience, to precede convulsions, a gentle emetic is often of service, and ought to be followed by the warm bath and some antispasmodic such as assafœtida, conjoined with a laxative if necessary. When it is deemed proper to exhibit emetics during the fit, a few spoonfuls of a solution of sulphate of zinc may be given in quick succession, as operating speedily and safely; or ipecacuanha may be employed, and the fauces tickled with a feather, to hasten its operation.

If the face be flushed, or the arteries of the neck beat strongly, it will next be proper to apply leeches to the forehead, and avoid stimulants;(e) but if the face be pale, a few drops of the aromatic spirit of ammonia may be given repeatedly, or a little white wine whey may be used in place of it. Opium is hurtful when the face is flushed, and even when it is pale, is only useful when there seems to be considerable irritation about the bowels, or from the gums. Oil of rue is strongly recommended by Dr. Underwood; and when the fits are repeated, it will be proper to make use of this or assafœtida, castor, or other antispasmodics. The spine should, in such cases, be repeatedly rubbed with some stimulant embrocation, or oil of amber, and a blister should be applied to the head.(f)

* The propriety of giving purgatives in convulsions, when the bowels are costive, or the stools unnatural, is confirmed by experience, and the effects of this course in chorea.

(e) If there be the appearance of much determination of blood to the head, we should instantly bleed the child. We cannot, under such circumstances, wait for the slow depletion by leeches. Convulsions in children, if not produced, are often kept up, undoubtedly, by fulness of the vessels of the brain. E.D.

(f) After the bowels have been well evacuated by an active purge, which ought not to be neglected in any case of convulsions, anodyne injections

After the period of infancy is past, and during the time when the second set of teeth are coming out, convulsions are generally of the epileptic kind, attack suddenly, the patient screaming out as if terrified, and then he falls down convulsed, and foaming at the mouth. These do not indicate that the patient shall be subject, after puberty, to epilepsy. They are relieved by attending to the state of the gums, removing decayed teeth, and cutting the gum over the grinder which is coming out, but especially by keeping the bowels open. Ol. succini, valerian, sea-bathing, and tonic medicines, have also been found of service. Convulsions have sometimes been caused by impure air, and can only, in such cases, be relieved by a removal to a purer atmosphere. This is a fact which it may be of service to remember.

The convulsions called *chorea sancti viti*, attack children most frequently from the age of eight years to that of puberty. This disease makes its approach with languor, and dislike to the usual entertainments of the age; a variable and sometimes very keen appetite, in general continued costiveness, attended usually with a hardness and swelling of the abdomen, especially at the lower part, though occasionally the belly is flabby, and rather small, instead of tumid. Sometimes the bowels are open, but the stools are not of natural appearance. Presently convulsive twitches and motions of the muscles of the face take place, and these are succeeded by more marked convulsive affections of the muscles of the extremities and trunk. These are often almost constant, ex-

jections will be very useful. They often act like a charm in quieting that peculiar irritability of the nervous system in children which renders them so prone to these affections. If the laudanum should fail, which it will sometimes do, we may try injections of the watery solution of assafœtida, and particularly of the strong infusion of the common hops. In those terrible cases of epilepsy where paroxysm follows paroxysm in rapid succession, I have witnessed very beneficial effects from injections of cold water. They will sometimes immediately suspend the paroxysms. Ice, or other very cold applications to the region of the stomach are also serviceable. Does not analogy warrant our employing these remedies in the obstinate convulsions of children? Placing the child in a current of cold air will be found, I am confident, to relieve the convulsions sooner than the warm bath. ED.

cept when the patient is asleep. He does not walk steadily, and sometimes seems to be palsied. At a more advanced period, the countenance becomes vacant, the eyes dull, the speech is affected, and, in some cases, the patient cannot even swallow without difficulty. Emaciation takes place, and a febrile state may be induced.

A variety of remedies have been tried in this disease, but none with so much advantage as purgative medicines. These, if given early, and before the disease is fully formed, will very effectually relieve the patient, and at this time they only require to be gentle, and repeated, as the state of the bowels may require. But when the disease is confirmed, "powerful purgatives must," as Dr. Hamilton observes, "be given in successive doses, in such a manner that the latter doses may support the effect of the former, till the movement and expulsion of the accumulated matter are effected, when symptoms of returning health appear." Calomel and jalap are useful purgatives in this disease, and Dr. Hamilton is in the habit of using aloetic pills on the days when these are not employed, which is a useful practice when the patient can swallow pills. Dr. Underwood recommends aloetic and mercurial purges. By these means, chorea is often cured in a fortnight, or, in obstinate cases, within a month. Boys are said to be more readily cured than girls. Tonic medicines are useful adjuvants. The food should be light and nourishing, and due exercise taken in the open air. (g)

Trismus nascentium is not a very frequent complaint in this country, but is not uncommon in warm climates. It makes its attack within the first fortnight of life, very rarely before the sixth day, and has been supposed by some to be connected with a costive state of the bowels, by others with

(g) I can bear testimony to the decisive and superior efficacy of active and continued purging in chorea. Two cases of the disease in boys which had been previously treated for several months by stimulants and antispasmodics without the least advantage were perfectly cured by me in a very few weeks, by administering every two days, a powerful purge. E D

the falling of the navel string and the state of the umbilicus.* In some instances, the spasm is confined to the jaw, which is rigid and closed; in others it extends to the neck or trunk, which is stiff and bent back. The disease is very fatal, notwithstanding that the warm and cold bath, opiates, purgatives, and blisters, have been fully tried. The state of the navel should be attended to, and proper dressings applied, so as to avoid irritation.

CHAPTER VII.

Of Croup.

THE croup is divided by some writers into two species, the inflammatory and spasmodic; but there is perhaps no case of croup in which these two states are not to a certain degree combined, only in some cases the inflammatory symptoms are more prominent than in others. The croup begins with shivering and other symptoms of fever, which, when the child is old enough, can be very well described by him; but in infancy, we discover them by thirst, restlessness, starting, hot skin, and a tendency to vomit. Along with these symptoms, but sometimes preceding them, the child has a dry cough. In some cases, the attack is very sudden, the previous indisposition being short and scarcely observable. The local disease manifests itself by a difficulty of breathing, attended with a wheezing noise; the voice is shrill, the cough is of a very particular sound, somewhat resembling the barking of a little dog; others describe it as resembling a cough sounding through a trumpet. It is not uncommon for vomiting to attend this cough in the early stage. The pulse from the first is frequent, the patient is restless and anxious, the face flushed and the mouth frequently filled with viscid saliva

* Vide a paper by Dr. Bartram, in Trans. of Coll. of Phys. at Philadelphia. Vol. I. p. 227

or phlegm. Very soon a great degree of drowsiness comes on, from which the child, however, is frequently aroused by the cough, and fits of suffocation; for this disease has exacerbations, during which the heavy sonorous breathing is exchanged for a violent struggle, in which the child makes a crowing noise. If this disease be more mild, the face in the remission is sometimes pale, otherwise it is flushed, and before death the lips become livid. If it do not prove suddenly fatal, the face and lips become tumid in the progress of the disease.

The duration of the complaint is various; in some cases it proves fatal in a few hours, in others not for a week, but most frequently in one day or two. Much depends, in this respect, on the degree of inflammation, the violence of the spasm, and the strength and constitution of the child. Sometimes there is much more of spasm than inflammation in the disease, in which case we have less fever, less permanent dyspnœa, and less frequent cough, but the attacks of suffocation are not milder. Those cases end best where the breathing is least sonorous, the fever most moderate, the cough early attended with expectoration, and the symptoms seem at times to become so slight as to constitute intermission.

Dissection has always discovered, on the inside of the larynx, a lymphatic incrustation, or layer of membranous looking substance, which is sometimes coughed up in considerable portions. (*h*) This, though it adds greatly to the danger and distress of the patient, is not to be considered as the cause of the disease; for it is merely an effect of inflammation, which, together with spasm, could produce all the symptoms without its aid.

(*h*) This is too general an assertion. Dissection does not always discover a membrane in the larynx. On the contrary, I believe, it is very rarely found. Though I have examined many children who have died of the croup I have never yet met with it. I have sometimes seen a collection of impacted mucous, but never any thing which resembled, in the least, a membranous organization. That the membrane of inflammation however, occasionally exists in the trachea I cannot doubt, as it has been mentioned by very credible writers. ED.

The most frequent cause is the application of cold and damp. Infants under six months are not often seized with this complaint, but from that period to the age of puberty are obnoxious to it. *(i)* They are peculiarly liable to it soon after being weaned.

From the nature of the disease, blood-letting has been with most practitioners a favourite remedy, and, doubtless, has of itself cured the complaint. In such cases, however, it has generally been pushed far, and been succeeded by great debility, for children do not bear much evacuation of blood. *(k)* In the commencement of the disease, detracting blood, especially if followed up by an emetic, will always be found of great service; but it ought not to be trusted to alone, neither should it be employed late in the course of the disease, nor even at an early period ought it to be repeated, if the symptoms do not speedily seem to yield to it. If possible, the blood should be taken by opening a vein; but if this cannot be done, leeches must be applied to the throat, but they are not equal to venesection.

(i) Croup sometimes occurs even among people of advanced age. Cases of this kind have been repeatedly noticed by different practitioners in this country. ED.

(k) If by this observation, the idea is meant to be conveyed, that children compared with adults are more apt to sink under the loss of blood, it is not only, I think, erroneous, but in its practical tendency exceedingly mischievous. During the growth of the body, the fluids, and especially the blood, in relation to the solids are larger in quantity, as is distinctly shown by a variety of circumstances. This fulness of their vessels, and the greater excitability of their systems, render children peculiarly liable to inflammatory affections. Nearly all their diseases partake in some degree of this character. It follows, therefore, that they require oftener to be bled. My own experience, confirmed by that of other practitioners, has perfectly satisfied me that blood-letting may be used with as much safety, and decidedly with greater advantage in the complaints of children, than in those of adults. If too, they do not at the time bear the loss of blood better, they undoubtedly recover much sooner from its effects. The prejudice against bleeding in children seems to have arisen out of the too prevalent opinion, that owing to an extreme delicacy and frailty of constitution they cannot bear any vigorous impression. As a natural consequence of this opinion the general practice in their complaints is extremely feeble, exactly, indeed, of that kind which has been facetiously

Emetics have been greatly recommended by some, whilst others have little faith in their utility. I have sometimes observed great benefit from them, if employed very early, and would advise them to be given in every instance. Even in the advanced stage of the disease, emetics do much service, appearing mechanically to remove the lymphatic membrane. Decoction of seneka, and preparations of squills, have been used to assist the expectoration of the membrane, but they do not equal emetics for this purpose.

Antispasmodics have been trusted to, almost exclusively, by many; but I apprehend that their exhibition ought to be confined to a different disease, which I shall immediately notice.

Blisters applied to the throat are useful remedies, and should not be neglected. The warm bath is also of service.

Calomel would appear to be a most powerful remedy in this disease, and, if given early, it will most frequently save the child. I do not, however, recommend it to the exclusion of other remedies, with which it is by no means incompatible. The early detraction of the blood, followed by an emetic, and the subsequent use of calomel, will afford the greatest hope of removing the disease. But I think it my duty to

described as observing a strict neutrality between the patient and the disease, neither declaring for the one nor the other. By no narrow or partial observation, I am thoroughly persuaded, that the very contrary of this opinion is true. Children, I have remarked, display an uncommon *tenacity of life*, and strength of constitution. They often survive under circumstances which destroy adults. They have been found living at the breasts of their mothers who had perished by exposure to cold. They resist contagion better than adults, and when attacked more certainly recover not only from contagious diseases, but from all others, if properly treated. They also sustain better the operation of the most active remedies, namely, of vomiting, purging, sweating, and blistering; and, I may repeat, BLEEDING. These superior vital energies give, moreover, to children very extraordinary *recuperative powers*.

Children recover confessedly, more speedily from wounds, and injuries, and surgical operations. They likewise recruit more rapidly after being reduced either by disease, or by remedies. While there is any indication of life, however discouraging the appearances may be, I never consider the case of a child in an acute disease as altogether desperate. But

state, that in some cases no alleviation was obtained by any remedy but the calomel; and in others it was trusted to alone, and with success. To an infant of six months, a grain of calomel may be given every hour, until it purge freely; to a child a year old, two grains; and to one of two years, sometimes even four grains are given every hour, until the bowels are acted on, and the child purges freely. The stools are generally green in colour, and their discharge is accompanied with an alleviation of the symptoms. When this is observed, the dose must be repeated less frequently, perhaps only once in two hours for some time, then still seldomer, and finally abandoned. Should the child be greatly weakened, either by the disease or the medicine, the strength must be afterwards carefully supported by nourishment and cordials. It is astonishing how great a quantity of calomel is sometimes taken in a short time, without affecting the bowels, or purging violently afterwards. Occasionally above 100, and often 50 or 60 grains, are given in this disease. Salivation is not produced in children.*

still retaining some hope, I continue to administer to the restorative principle of the constitution. ED.

* That excellent and experienced practitioner, Dr. James Hamilton, jun. to whom we are chiefly indebted for the introduction of the use of calomel in croup in this country, from the practice of Dr. Rush, (m) is extremely unwilling to bleed children freely in their diseases, from its subsequent debilitating effects; and in croup, begins at once with the calomel, after having used the warm bath. He observes, "that in every case where "it was employed previous to the occurrence of lividness of the lips and "other mortal symptoms, (amounting now to above forty) it has completely succeeded, both in curing the disease, and in preventing any "shock to the child's constitution." He adds, that he has now seen two cases,

(m) Mr. Burns has erroneously ascribed to Dr. Rush the credit of introducing calomel in the treatment of croup. As far as I have been able to ascertain, it was first employed in this disease about forty years ago by Dr. Kuhn of this city, to whom the practice of physic is indebted for some of its most valuable contributions. So far indeed from Dr. Rush having originally suggested this medicine, he from theoretical views of the disease, resisted its employment, and published his objections to it in the papers of the time. Deeming croup to be purely a spasmodic affection of the larynx, produced by debility, he maintained that it was to be managed by stimulants and antispasmodics, and especially by opiates. ED.

Spasmodic croup, or acute asthma, is often but not necessarily connected with inflammatory croup. There is, perhaps, no case of the latter disease which is not attended with spasm of the muscles of the larynx, but there are many cases of spasm, without inflammation; yet if the spasm continue long, there is great risk of inflammation taking place, and of a membrane being formed. The spasmodic croup attacks children chiefly, but it may also affect women, especially about the age of puberty, and harass them occasionally for many years afterwards. It makes its attack very suddenly, generally at night, and sometimes for many nights in succession, especially if the child be agitated, or the mind of the young woman anxious respecting it. The patient breathes with difficulty, and with a wheezing sound, has a hard barking cough, with paroxysms of suffocation, as in inflammatory croup. The extremities become cold, the pulse during the struggle is frequent, but in the remission it is slower, and, if the remission be great, it becomes natural, unless kept up by agitation. There is little or no viscid phlegm in the mouth, no drowsiness, but rather terror, and the eye stares wildly during the paroxysm. The disease is often suddenly relieved by sneezing, vomiting, or eructation. It differs, then, from the inflammatory croup, in the suddenness of its attack, in there being little fever, but only quickness of pulse, greatly abating when the child does not struggle for breath; no drowsiness, and little phlegm about the mouth. The cough is less shrill, and the fit often goes off suddenly and completely, either spontaneously, or by the use of the remedies acting quickly. Sometimes, however, inflammation takes

cases, where, although the croup was cured, the patient sunk from weakness; and therefore very properly gives a caution to stop the calomel, whenever the symptoms begin to yield. The alleviation in true croup follows the discharge of dark green stools, like boiled spinach; in spurious croup, it takes place whenever vomiting has occurred. When much debility is produced, he, besides using cordials, applies a blister to the breast. I have a high opinion of the efficacy of calomel, but I cannot speak so strongly as Dr. Hamilton, for even when it was early, pointedly, and exclusively employed, and brought away green stools, I have known it fail.

place, and the disease is, in infants, converted into true croup.

It is at times brought on by exposure to cold, and in that case, it is occasionally preceded by slight sore throat, or hoarse cough, but oftener the spasm comes on without any precursory symptoms. Sometimes it is excited by dentition, or, if the patient be older, by passions of the mind. Not unfrequently, a renewal of the disease is excited in those who are subject to it, by eating a full meal in the evening.

With regard to the treatment, I shall briefly state the result of my observation. Venesection has uniformly given relief, the spasm suddenly abating, and very soon going entirely off, after a certain quantity of blood has flowed. Topical blood-letting has not the same effect. But if the paroxysm should be repeated for many nights, this remedy cannot be employed on every attack, as it debilitates and predisposes to the disease. Emetics, such as sulphate of zinc, have the same effect with blood-letting in general; but sometimes the fit, though impeded during their operation, returns, and in such cases has yielded to venesection. Occasionally the emetic has been very long of operating, the stomach not being easily acted on; and in those cases, blood-letting has produced speedy vomiting and immediate relief. Opiates and anti-spasmodics, such as ether, given in large doses, have, if exhibited in the very commencement of the attack, sometimes checked it, but have not always that effect, and, if not given soon, are longer of procuring relief. *Assafætida** has been strongly recommended in this disease, and has sometimes a very good effect. The warm bath is also useful. If the child be about the period of dentition, the gum should be examined, and cut if tumid. If the disease do not soon yield to these

* Dr. Millar has given an ounce of this gum to a child of eighteen months old in forty-eight hours, and almost as much at the same time in form of clyster. His formula is as follows: *R. G. assafætida, ℥ii, Spt. mindereri, ℥i. Aq. puleg. ℥iii. M s. a.* A table-spoonful of this is to be given every half hour. Vide *Observations on Asthma*, p. 43. This medicine is also prepared as a nostrum under the name of Dalby's Carminative, which has been used for children.

remedies, there is ground to suppose that it will be converted into the other species of croup, and it will be proper to give the calomel freely. (n)

A relapse is to be prevented by giving purgatives, and avoiding exposure to cold damp air. In young girls, a course of tonic medicines alone, or combined with assafœtida or va-

(n) The practice recommended by Mr. Burns is nearly the same as that which prevails in this country. Though the distinction of inflammatory and spasmodic croup is undoubtedly well founded, yet I am not aware, that it leads to any practical difference. My mode of treating this disease is as follows. I begin by endeavouring to puke the child very freely, and for this purpose I commonly employ the tartarized antimony, given at short intervals, as being one of the most certain and powerful of the emetics. At the same time I direct the child to be put into the warm bath for ten or fifteen minutes. This is a useful remedy. It rarely fails to promote the operation of the emetic, and will, indeed, alone sometimes cure the disease. If, however, the emetic does not operate, or if after its operation, the anticipated effect be not realized, I then bleed copiously, and repeat the bath and the emetic. The attack must be extremely obstinate if it do not now yield. Nevertheless, it will occasionally continue with little or no abatement. Under these circumstances, I resort to topical bleeding either by leeches, or by cups, and afterwards, if necessary, apply a blister, or sinapism of mustard to the throat, extending from ear to ear. If the preceding remedies fail, or the symptoms be so alarmingly violent as to demand immediate relief, I bleed *ad deliquium animi*. When pushed to this extent, I may almost say that blood-letting in these cases is invariably successful. I learnt this practice from two of the most distinguished physicians of our country, who seem to have employed it nearly about the same time. I allude to Dr. Belville of Trenton, and Dr. Dick of Alexandria. After the force of the disease is broken, which is shown by the alleviation of the hoarseness, and of the difficult respiration, and above all by the restoration of the natural susceptibility of the system to the action of medicine, I administer calomel, not in small and repeated doses as is more generally advised, but in the largest possible dose, in order that it may speedily and most actively purge. In this particular stage of the disease a thorough opening of the bowels carries off the lingering symptoms, obviates a relapse and confirms the convalescence. But if cough, or hoarseness, with tightness of the chest and deficient expectoration remain, I employ the decoction of the polygala senega as an *expectorant*. It is in extinguishing the remains of croup that it displays, I think, its best properties. Doubtless, however, it may be used at an earlier period of the disease with advantage as an emetic. But still I prefer the emetic tartar. I have recently heard that croup has been very successfully treated by a watery solution of corrosive sublimate, by large quantities of

lerian, will be useful; and when the attacks have been kept off for some time, sea-bathing will be proper.

Some children are subject to slight wheezing, continuing for a day or two, with intermissions, and accompanied with a hoarse cough, but without fever. Emetics, laxatives, and a large burgundy pitch plaster, applied to the back, remove the disease.

CHAPTER VIII.

Of Hooping-Cough.

THE hooping-cough often begins like a common cold, the child coughing frequently, and having more or less fever. In some cases the fever is slight, going off in the course of a week, in others very severe and long continued, attended with great oppression or sickness, and want of appetite. The cough is sometimes very early attended with that sonorous spasmodic inspiration, denominated hooping; in other cases, not for a considerable time, and this is considered as a favourable circumstance, but it is not always so, for in young children, death may take place although the disease never fully forms. When the cough becomes formed, the paroxysm consists of a number of short expirations, closely fol-

melted lard or olive oil given internally, and by common mustard in the state in which it is used at our tables. Of the latter, a tea-spoonful is given to a child, to be repeated if required. Its operation in spasmodic croup especially, is represented to be most decisively useful. I have not tried, nor am I disposed to try any one of these remedies. They each come to me, however, recommended by very respectable authority. With the remedies already known to me I rest satisfied. These in my practice have rendered croup the most curable of all the violent infantile diseases. Ed.

lowing each other, so as to produce a feeling of suffocation, relieved at last for an instant by a violent, full, and noisy inspiration; then in general the cough or spasmodic expirations recommence, and the paroxysm, consisting of these two parts, continues until a quantity of phlegm is coughed up or vomited, alone or with the contents of the stomach, and this ends the paroxysm. These paroxysms vary in frequency and duration. Sometimes they are slight; at other times, and especially during the night, they are attended with a most painful sensation, and appearance of suffocation, the face becoming purple, the sweat breaking, and blood gushing from the nose or other parts. But even severe as the paroxysms are, if the disease be not attended with fever, the patient seems quite well after the fit, and begins to eat with a renewed appetite. A fit of crying will at all times, even after the disease has been apparently removed, excite the cough.

Hooping-cough is very dangerous for infants, as they often die suddenly in a fit of suffocation; elder children escape more safely, though even they are sometimes carried off, the fever continuing, or anasarca coming on, with exhaustion. Sometimes the lungs become diseased, and hectic fever takes place.

Many remedies have been employed in this disease, which it will be proper to divide into those intended to abate the fever, and those given to relieve the cough. Venesection has for the first of these purposes been recommended, but it is very rarely requisite, and only when the patient is plethoric, and we apprehend that some vessel may burst in the lungs from the violence of the cough. Leeches may be applied to the chest. The most generally useful remedies are laxatives and the saline julap, which often in a few days moderate the fever greatly. The tepid bath is useful, and, if there be much irritation and restlessness, hyoscyamus sometimes does good.

For the relief of the cough, nothing is so beneficial as emetics. These have been given in nauseating doses, so as to make vomiting be readily excited by the cough; but, in general, a full dose of ipecacuanha will be as effectual, and is less distressing. At first, the emetic should be frequently

repeated, perhaps morning and evening, or once a-day, or once in two days, according to circumstances; and this degree of frequency is by no means injurious. Antimony has been highly praised by many, but it is more apt to weaken the stomach, and in very young children it sometimes produces violent effects. Stimulating substances, such as a combination of soap, camphor, and oil of turpentine; or juice of garlic, or oil of amber, &c. rubbed over the spine, or the thorax and stomach, have a good effect; and similar applications to the soles of the feet have certainly in some cases done much good. In bad cases, where the cough is frequent, and attended with pain in the breast, or oppression in breathing, repeated blisters are proper, and may prevent hectic from taking place. Antispasmodics, such as assafœtida, ol. succini, musk, &c. have been recommended and in some cases are successful. Opiates are also of service. Dr. Willan says, that he found the watery infusion of opium more useful than any other narcotic. When the disease is protracted, cicuta has been recommended, but it does not seem to have any advantage over opium. It has also been applied externally. The most effectual remedy, however, is change of air, which often has a marked effect on the disease in a few hours. When the patient becomes restless, and coughs more, it should again be changed. The diet ought to be light. When the paroxysms have been very severe, the breathing oppressed, the cheeks livid, and the pulse very weak, some children have been saved by the application of leeches to the chest, blisters, and small doses of the compound powder of ipecacuanha.

When the patient is threatened with hectic, or becomes emaciated and weak, nothing is of so much benefit as country air and milk diet, at the same time that we keep the bowels open. Blisters should be applied to the breast, if there be fixed pain or dyspnœa. If there be anasarca swelling, the digitalis, conjoined with cordials, will be useful.

If the cough return after it has gone off for a time, a gentle emetic is the best remedy.⁽ⁿ⁾

There is a cough very like whooping-cough, and which gives rise sometimes to the groundless fear that the child is going to take that disease; or on the other hand, if somewhat prolonged, it may pass for whooping-cough; and afterwards, the child being exposed to infection, takes the disease, and is said to have had it twice. This kind of cough has less of the suffocating appearance than the whooping-cough; the expirations are fewer, and do not follow each other so quickly, and the inspiration is not performed so quickly, and with the distinct whooping sound. It sometimes succeeds measles, or appears as a kind of influenza. It is cured by an emetic and anodynes.

(n) Like most other contagious diseases, the whooping cough will run its course in spite of all our exertions to cure it. We can, indeed, do little more than mitigate the more violent symptoms. Among the best of the palliative remedies is a watery solution of assafetida. Where the cough is attended, as is sometimes the case, with convulsions, the sulphate of zinc may be given with advantage. A combination of the salt of tartar and cochineal, said to have been originally suggested by Dr. Pearson of London, has lately become a very *popular* remedy in this city. This, however, is not the prescription of Dr. Pearson. His is as follows:

℞. Carbon. sod: gr. iii.
vin. ipecac. gtt. v.
tinct. theb. gtt. i.
aq. font. ℥j.

To be given to a child a year old every three hours. I have tried both the alkalies but with little success. I am sure that the above mixture derives its efficacy, if it have any, from the laudanum and ipecacuanha which it contains. The tincture of cantharides united with the decoction of bark, and elixir paregoric has been highly extolled by Dr. Lettsom. I have no experience with it. Emetics, on the whole, I think are our best means in this disease. They should be given in the first stage of it, and be repeated at least once a day while the violent symptoms continue. Bleeding and blisters are occasionally useful. ED.

CHAPTER IX.

Of Catarrh.

INFANTS are subject, as in after life, to catarrh, either common or epidemic. It is attended with fever and inquietude, flushing of the cheeks, watery discharge from the eyes and nostrils, disposition to sleep, frequent and sometimes irregular pulse, panting and shortness of breathing, with frequent cough, which however is not severe. It generally goes off within a week, by the use of gentle purges, blisters, antimonials, and, if the fever be considerable, leeches applied to the breast. A hoarse barking cough, is cured by an emetic, and wearing flannel round the throat. (*p*)

 CHAPTER X.
Of Inflammation of the Pleura and Stomach.

INFLAMMATION of the pleura is more frequent with children than many suppose. The skin is very hot, the pulse quick, the breathing short and oppressed; there is a cough, aggravated by crying, by motion, and by laying the child down in bed. He is likewise more disposed to cough, and is more uneasy on one side than the other. If not relieved soon, the breathing becomes laborious, the extremities cold, the cough stifling, with rattling in the throat and stupor; or the pulse becomes irregular and intermittent, the extremities swell, the countenance is sallow or dark coloured, the breathing difficult, with short cough, and frothy expectora-

(*p*) Blood-letting, and that too pretty profusely, is very often required to cure the catarrh of children, in this country. As it appears here, it is generally a highly inflammatory disease. EN.

tion, which oozes from the mouth. On inspecting the chest, the inflammation is sometimes found to have terminated in hydrothorax, oftener in adhesions. This disease requires venesection, or the early application of leeches to the sternum, according to the age and constitution of the child; the use of blisters, calomel purges, and the tepid bath. Antimonials and digitalis are also sometimes of service.(q) In the last stage, diuretics are proper, especially a combination of squills and digitalis, whilst the strength is to be supported by the breast-milk, or light diet.(r)

This disease sometimes terminates in abscess and purulent spitting, with hectic; but much more frequently, the pulmonary consumption of infants and children begins, as in adults, more slowly, is marked by short dry cough, flushings of the face, frequent small pulse, difficult breathing, wasting, and nocturnal sweats. The expectoration is generally swallowed, but sometimes it is ejected, or it is vomited up, and is found to be purulent. There is seldom any cure for this state; all that can be done is to send the child to the country, apply small blisters to the breast, keep the bowels in a proper state, give a mixture containing opium and digitalis, and support the strength with suitable nourishment. If the expectoration be only phlegm, then, although all the other symptoms be present, there is considerable hope of saving the child. But if it be purulent, and the parents are consumptive, the danger is much greater. This state, however, does not in general succeed pleurisy. It is generally induced more slowly, by tubercles, accompanied with enlargement of the bronchial glands.*

(q) This disease is to be treated exactly as pleurisy in the adult. If the attack be violent, the child will probably require to be bled two or three times. Blisters should not be applied till the disease is somewhat reduced. Previously, they always do injury. The pulse here, will be one of our best guides. E.D.

(r) The decoction of the senega snake root is an admirable remedy in this stage of the disease. E.D.

* Although it is not exactly connected with my present subject, I may mention that sometimes the bronchial cells are much enlarged, the child
has

Inflammation of the stomach is not a common disease of infancy, nor is it discovered without considerable attention. There is great fever, frequent vomiting, the mildest fluid being rejected soon after it is swallowed, the throat is first inflamed, and then covered with aphthæ, which spread to the mouth. The child cries much. The region of the stomach is full and very tender to the touch. The bowels are generally loose. If the child be old enough to describe his sensation, he complains of heat or burning about the stomach and throat; if younger he directs the hand frequently to the stomach and breast. There is sometimes, from the first, a cough and short breathing, but the constant vomiting shows the disease to be in the stomach. It is not easy to say what causes this, for it cannot always be traced to acrid or stimulating substances swallowed. It is proper immediately to apply leeches to the pit of the stomach, then a blister to the same part, and stools are to be procured by calomel. Fomentations and the warm bath are also useful. M. Saillant recommends the juice of lettuce,^(s) to be given in spoonfuls every hour, but I do not know any advantage this can have over mucilage and laxatives. The disease is uncommon, but when it does occur, is apt to be mistaken for a disordered state of the stomach and bowels, producing aphthæ.^(t)

There is another state of the stomach, which, from the has cough and difficult breathing. The air escapes, and passes from the root of the lungs to the mediastinum, insinuating itself betwixt its layers, and thence to the neck, where it produces enphysema. Punctures ought immediately to be made.

(s) The juice of lettucc is a very powerful anodyne. By inspissation an excellent opium may be procured from it. If it be useful in the above disease, it is probably owing to its anodyne property. ED.

(t) In all cases of this affection, except very slight ones, bleeding is indispensable. Inflammation in any portion of the alimentary canal runs very speedily to gangrene, which can only be avoided by a pretty free use of the lancet. The pulse here, as in many instances, is a very fallacious guide. We are not to expect to find it much altered. In general, it is lower and more feeble than in health, and this too in proportion to the violence and extent of the inflammation. ED.

softness of the texture, is apt, after death, to be confounded with gangrene. There are, however, no marks of inflammation; but the stomach seems as if it had become so soft by maceration, that it gives way on being handled.* This state is sometimes confined to one part of the stomach,† sometimes it extends even to the small intestines, and more than one child in the same family have died of this disease. It is not easily discovered before death, for its most prominent symptoms, namely, purging, with griping pains, occur in other diseases of the bowels. It is, however, very early attended with coldness of the face and extremities, and the countenance is shrunk and anxious. It affects the intestines oftener than the stomach.

CHAPTER XI.

Of Vomiting.

VOMITING is very seldom an idiopathic disease of children. Many puke their milk after sucking freely, especially if shaken or dandled. This is not to be counted a disease, for all children vomit more or less under these circumstances. A fit of frequent and repeated vomiting, soon after sucking or drinking, if unattended with other symptoms, and the

* This state of the stomach cannot always be attributed to the effect of the gastric juice. When the stomach is acted on by this solvent after death, we find that it is very soft, some of it in a state of semi-solution, the inner surface being dissolved, and some of it actually removed, so as to make a hole. When the preparation is put into spirits, and held between the eye and the light, the flocculent appearance of the inner surface is distinct, and numerous globules are seen within the peritoneal coat, which are probably the glands undissolved.

† Dr. Armstrong mentions a case of this kind, where the upper part of the stomach was thus diseased, but the pylorus sound. The stomach was distended with food, but the intestines were very empty, which might be owing to diminished power of contraction in the stomach.

egesta are of a natural appearance, may be supposed to depend on irritability of the stomach, which can be cured, by applying to the stomach a cloth dipped in spirits, and slightly dusted with pepper, or an anodyne plaster. Sometimes a spoonful or two of white-wine whey settles the stomach. If, however, the egesta be sour or ill-smelled, and the milk very firmly curdled like cheese, and the child is sick, it is probable that more of that caseous substance remains, and a gentle puke of ipecacuanha will give relief. On the other hand, should the egesta be green and bilious, gentle doses of calomel will be serviceable. Vomiting, connected with purging or febrile disease, is to be considered merely as symptomatic. It is, however, desirable to restrain it, which is done by giving small doses of saline julap, and removing the primary disease. Sometimes the œsophagus is found ruptured in children, and the contents of the stomach poured into the thorax. This probably happens from spasm taking place at the upper part of the œsophagus, whilst the stomach is rejecting its contents.

CHAPTER XII.

Of Diarrhœa.

WHEN we consider the great extent of intestinal surface, its delicacy, and the intimate connexion which exists betwixt the bowels and other organs, we shall not be surprised at the powerful and important effects produced on the system at large, by disorder of the alimentary canal.

In attending to diarrhœa, we must examine the structure of the intestine, and the purposes it is destined to perform. The bowel itself consists of muscular fibres, of glandular apparatus, of nerves and blood-vessels, and of a system of lacteal vessels, which probably do more than absorb, assisting also, by glandular action, in the formation of chyle,

which does not exist in a perfect state in the contents of the bowels. Now, although these different parts tend to constitute one organ, yet they are not so blended in action, that all must be alike affected when the organ is deranged. All may be disordered, but one sooner, and to a greater degree, than the rest. The fibres may be excited to inordinate action, producing rapid contraction, and speedy expulsion of the contents; and this may, or may not, be accompanied with spasms and great pain. The exhalents may be greatly affected, producing copious discharge of intestinal secretion, which may be watery, mucous, slimy, or, when the vessels are abraded or open, tinged with blood. The absorbents may have their action impeded, and the chyle is not duly absorbed. The injury of one of these systems of organization not only affects the rest, but this intestinal disease influences parts immediately connected with the intestines, such as the stomach, liver, pancreas, &c. This leads us to consider the contents of the bowels. If the food be good, and the stomach digest properly, the chyme is good and natural. But if the food be bad, or in exuberant quantity, or the power of the stomach be impaired, the chyme is not properly formed, and the food is found in the intestines not thoroughly changed or digested, perhaps little altered in its appearance. If the bowels have the same torpor with the stomach, it is retained, and forms accumulations, ending in great mischief. If the bowels be irritable, as in diarrhœa, it is generally passed speedily. The egesta from the stomach are naturally mixed with the bile, pancreatic juice, and intestinal secretion; and the colour of the compound is yellow, or yellow with a brown tinge; and during its passage downwards, a certain quantity of gas, possessing a peculiar smell, is extricated.* The changes effected in this passage are not merely chemical, but dependent on animal action; for the contents of the stomach, mixed with the fluids found in the intestines, and exposed to the same degree of heat, will not form natural looking fæces, but

* Both the smell and the colour of the fæces are found to depend greatly on the bile. When the bile is obstructed, the stools are clay coloured or pale, and have not the feculent smell.

the substances will simply assume the acetous or putrefactive fermentation. If the powers of the stomach and intestines be impaired, then this fermentation goes on to a great degree in the stomach and bowels, much gas is extracted,* inflation is produced, and the aliment becomes sour or putrid. If too much bile be added, the fæces are green, sometimes dark coloured. This redundancy of bile may be produced by causes acting immediately on the liver, at least not through the interposition of the intestines, and the bile comes then to be a source of irritation to the bowels, and excites diarrhœa; or the affection of the bowels may influence the liver, and excite it to greater secretion. Some children are more bilious than others, and are subject to fits of paleness, sickness, and bilious vomiting.† The pancreatic juice and intestinal secretion, when not changed in quality, but only increased in quantity, are probably not, like the bile, a source of irritation, but only the produce of it. But these discharges, sometimes mixed with bile, sometimes with blood effused from a small vessel, may accumulate, together with the egesta of the stomach, and form a black, pitchy looking substance,‡ which sooner or later produces very bad effects. In other instances, these form a more watery substance, which is passed off with griping, and purging of stools like moss water.

The colour of stools in diarrhœa varies according to the violence of the disease. In slight cases, where the action of the bowels is only increased in degree, but not altered in kind, and the stomach is not injured, the fæces are of a yel-

* Vauquelin has ascertained that the stools are always more or less acid. When exposed to the air, they become more acid, and soon afterwards exhale ammonia, which they do till destroyed. The greatest part of the gas extricated in the bowels, consists of carbonic acid, with carbonated and sulphated hydrogen, more or less fœtid. In indigestion, the greatest part of the gas is inflammable. Fourcroy System, &c. tom. X. p. 75.

† The sickness produced by bile in the stomach is accompanied with great paleness, oppression, and appearance of dissolution. The relief obtained by vomiting is often great and instantaneous.

‡ The decomposition of bile by acids, which combine with its soda, furnishes a precipitate, which is thick, viscid, very bitter, and inflammable. This is probably the origin of pitchy looking stools in some cases, though in others they may proceed from effused blood.

low colour, but thin, owing to the increased discharge, and have not run into fermentation. When in children the digestive faculty is somewhat impaired, fermentation goes on more strongly, and the fæces contain more acid than usual, which, although the bile be not increased in quantity, may give them a green colour,* and often they may in worse cases be seen to ferment; the intestines are distended with air. Very green stools, however, imply a redundancy of bile, and the darker the shade of green the greater is the quantity of bile. When the irritation is great and universal, the stools are very watery, and of a dark green colour; or if the irritation be still greater, they are brown; and in either case, if the child be on the breast, portions of coagulated milk are found swimming in the fluid; if not, we have either bits of any solid food taken by the child, or small masses of dark-coloured fæces, which had been accumulated in the bowels. When the digestive faculty is almost gone, the stools consist of the aliment mixed with bile. Thus, if the child be drinking milk and water, or be not weaned, the stools consist of green, watery fluid, with clots of milk, streaked with bile. When the irritation is greatest at some particular part of the intestines, it is not unusual for these appearances to alternate with discharge of slime and blood, as we see in intus-susception. When the secretion of bile is diminished, the stools have a cineritious appearance; but this state is not often met with in diarrhœa. Sometimes, when the liver is affected, or the bowels much diseased, the fæces may, among other changes, put on the appearance of pale yolk of an egg, or are almost like pus.

Diarrhœa may be injurious in different ways. The increased peristaltic motion of so great a tract of sensible muscular substance, must, like other great muscular exertion, weaken the bowel, and thus the whole body which sympathizes with it. Great debility is often rapidly excited by affections

* All acids decompose bile, and in general produce a green precipitate. Either an unusual quantity of bile, or of acid in the bowels of children, will produce green stools; and stools which are not at first green, often become so in a short time after they are passed.

of the intestinal fibres, though there has been little evacuation. Diarrhœa likewise injures the system, by the irritation and great secretion which often accompanies it; add to this the diminution of the powers of digestion, and the obstacle afforded to the absorption of the due quantity of chyle, together with the derangement which other parts of the system may suffer, and the diseases thus excited, such as convulsions, anasarca, &c.

On inspecting the bowels after death, they are very seldom found in a state of inflammation, but either greatly inflated and relaxed, or with more or fewer intus-suscepted portions. In one case, no fewer than 47 intro-susceptions were found in the same body. On examining these portions, the *valvulæ conniventes* are found to be rather more prominent than usual, but the parts are not inflamed. Invagination of the intestine is the most frequent cause of fatal diarrhœa, not less than 50 cases having occurred to my brother in the course of his dissections. Intus-susceptio may be produced suddenly in consequence of spasm, and may give rise to great pain, with purging; or it may be caused by acrid purgatives, or those which produce much griping, as senna tea, made by boiling the leaves; or it may take place in diarrhœa, when attended with considerable irritation, and adds to the violence of the disease. It is sometimes accompanied with a diseased state of the glands. There may be a double intus-susception, and the tumour formed may lodge in the pelvis, and fill it. Inflammation is very far from being a necessary attendant on this state, it is even uncommon.

The diagnostic of intus-susceptio is very obscure, and whatever may be said to the contrary, I believe we have no certain mark by which to judge. It has been discovered, when no previous circumstances led to a supposition of its existence. But in general there is considerable pain, and marks of local irritation; such as slimy stools, with or without blood; sometimes a little frothy slime is passed, sometimes a substance like rotten eggs, and at times the contents of the intestines are vomited. It is attended with stretchings and cryings, as in colic, with occasional attacks of great pale-

ness, like syncope; the belly is tender to the touch, and sometimes in infants the pulse is slower than ordinary. When the disease continues long, the emaciation is very great, the face resembling the bones, with merely a skin covering them, whilst the eyes are sunk. On the extremities, the skin is lax, and seems much too wide for the bone and muscles.

Sometimes the intus-suscepted portion is thrown off, and passes by the rectum.

Dissection likewise shows, that a diseased state of the liver not unfrequently accompanies diarrhœa. In some cases, the intestines become very soft, white, or almost diaphanous, and easily torn, and contain a substance somewhat like purulent matter, or thin custard.

Diarrhœa appears under various circumstances, not only with regard to the nature of the stools, but their frequency, the pain which attends them, the duration of the complaint, and the effect on other parts. In some cases the stools are extremely frequent, and uniformly so. In others, the dejections come in paroxysms, being worse either through the night or through the day. Some children are greatly griped; others are sick, oppressed, and do not cry, but moan. In severe cases, the stomach is very irritable, rejecting the food; but it is not equally so in every stage of the disease, though the stools may be the same in frequency. The appetite is more or less impaired, and in bad cases the aliment quickly passes off, and every time the child drinks it is excited to purge. The mouth, in obstinate bowel complaints, generally becomes aphthous, and the anus excoriated or tender, and it is not uncommon for the feet to swell. Sometimes the child is flushed at certain times of the day, or the face is uniformly pale, and the skin waxy in appearance. In general, if the disease be severe, a considerable degree of fever attends it. The stools may come away with much noise from wind, or may be passed as in health. When there is great irritation, they are either squirted out forcibly, or come in small quantity, with much pressing. Diarrhœa sometimes proves fatal in 48 hours, but it may be protracted for several weeks, as is often the case when intus-susceptio has taken place. In such protracted cases, the emaciation is prodigious, the face is

lank, the eyes sunk, and the expression anxious; the strength gradually sinks, the eyes become covered with a glossy crust, the extremities cold, the respiration heaving, and the child dies completely exhausted.

Diarrhœa may be excited by a variety of causes; such as too much food, or sudden change of the kind of aliment, and hence it is often caused by weaning a delicate child. Attempts to bring up children altogether on spoon meat, some injurious quality of the nurse's milk, improper diet after weaning, the irritation of ill digested food, redundancy of bile, previous costiveness, dentition, the application of cold to the surface, or a morbid state of the bowels, connected with general debility, produced either by bad air or natural delicacy of constitution, are causes of diarrhœa. Those children suffer most who are feeble, puny, or delicate.

As diarrhœa is a frequent cause of death, we cannot be too attentive to its treatment, especially as we find, that if it be neglected in its commencement, it is apt to end in a very obstinate or incurable state. On this account I have been led to consider this disease very carefully, and shall briefly mention the treatment I have found most effectual. When the stools are natural in colour, but more liquid than usual, the frequency moderate, the continuance short, and no fever is present, it will be useful to give small doses of rhubarb, conjoined with an aromatic, taking care, however, that these do not end in producing the opposite extreme, or costiveness. In many cases the disease will subside of itself; but if it do not abate spontaneously, or by the use of small doses of rhubarb, then it comes to be considered, how far it is proper to check the inordinate action of the fibres of the intestines. This is readily done by an anodyne clyster. But if the diarrhœa have been excited by improper food, or redundancy of food, or if it be attended with acute fever, and especially if the child be plethoric, it will be useful to give some mild laxative, such as an emulsion containing castor oil, or small doses of calomel. The tepid bath is also beneficial. If there be oppression with fever, a gentle emetic will be a proper prelude to the laxatives. Afterwards, if the disease continue,

and there be marks of much irritation of the fibres, anodyne clysters will be of service.

If the diarrhœa come on quickly, and the stools are from the first green or morbid, and the stomach be irritable, or its functions impaired, we should examine the gums, and cut them if the child be getting teeth. This removes or lessens a source of irritation. But whether the disease be produced by teething, by change of food consequent to weaning, or other causes, great attention is necessary. If the child be sick and oppressed, a few grains of ipecacuanha will be proper; and afterwards small doses of calomel,* or some other laxative,† should be given morning and evening. These carry off the morbid feculent matter, and excite a better action of the bowels. If they do not increase the debility and pain, and if they render the stools more natural in appearance, they do good, and may be continued in decreasing quantity, till they are abandoned altogether. But if they merely increase the frequency of the dejections, without greatly altering their quality, the stools continuing watery, ill-coloured, and offensive, and the strength and appetite sinking, we can expect no good by continuing them, and must restrain the purging by repeated anodyne clysters, taking care that we do not delay their use too long. When the secretion is copious, and the stools frequent, and perhaps squirted out with great irritation, the strength will sink very rapidly, and a few hours may decide the fate of the child. In such circumstances, it is necessary, even although the contents of the bowels be morbid, to moderate the fibrous and secretory action, by anodyne clysters. Afterwards the morbid matter is

* That excellent practitioner Dr. Clarke of Dublin, has strongly advised half a grain of calomel to be given every night or every second night, to infants, when troubled with green stools and griping; observing, that in the course of a week or two, the stools become natural, and that it is rarely necessary to give more than from 4 to 5 grains altogether. Mem. of Irish Acad. vol. VI.

† Cold drawn castor oil may be given in the following form: R. Ol. Ricini, ℥iii; Mannæ, ℥ss; Spt. ammon. Arom. ℥i; Aq. Cassiæ ℥ss; aq. Font. ℥iss. fiat emulsio. Of this a tea spoonful may be given as often as necessary.

expelled, or can be removed by gentle laxatives. Opiates given by the mouth have often a bad effect on the child, and never equal the good effects of clysters. Cretaceous substances, joined with aromatics, are useful when there appears to be a redundancy of acid; but astringent medicines, such as kino or catechu, though they sometimes seem in slight cases to be of service, yet in more obstinate diseases fail, unless they be combined with opium, and then the benefit is perhaps more to be ascribed to that drug than to their effect; or if given in great quantity, they may perhaps excite to invagination of the intestines. In obstinate cases, small doses of calomel given morning and evening, with the use of anodyne clysters at the same time, to keep the purging within due bounds, are of more service than any other remedies. Dr. Armstrong, however, when the stools are liquid or watery, sometimes colourless or brownish, or streaked with blood, and of very offensive smell, advises antimonial vomits, repeated every six or eight hours, till the stools change their appearance. But this remedy operates severely, and may induce no small degree of debility. If the plan be rejected, he advises a solution of epsom salts, with a small quantity of laudanum. Dr. Underwood, in this disease, prescribes emetics, then warm purges, and afterwards small doses of ipecacuanha, with absorbents and aromatics.

Dr. Cheyne, in obstinate and prolonged purging, which, from frequently occurring about the time of weaning, he calls atrophialactatorium, strongly advises small and repeated doses of mercury, as the most effectual remedy.

When there is much fever, the use of the tepid bath morning and evening, and small doses of saline julap, and clothing the child in flannel, will be of great benefit.

In every case, external applications have, I think, a claim to be employed. These consist of frictions with anodyne balsam, or camphorated oil of turpentine, or the application

of an anodyne plaster,* to the whole abdomen, which is better. It is also proper to bandage the belly pretty firmly, but by no means tightly, with flannel.

During the whole course of the disease, it is proper to support the strength with light nourishment, such as beef te a arrow-root jelly, toasted flour boiled with milk, &c.; or if the child be not weaned, it is sometimes of service, in continued or repeated attacks of diarrhœa, to change the nurse. The strength should be supported by small quantities of white-wine whey, given frequently.

When the mouth becomes aphthous, it may be washed with a little syrup, sharpened with muriatic acid; or borax may be employed, along with the proper internal remedies; and when these restore the bowels to a healthy state, the mouth becomes cleaner. The appearance and disappearance of the aphthæ generally mark the fluctuation of the bowel complaint. The excoriations which appear about the anus require to be bathed with solution of sulphate of zinc, and call for great tenderness in administering clysters.

When the feet become swelled, and the urine diminished in quantity, some diuretic must be added to the other means. The best consists of a combination of tincture of digitalis and spt. ether nit.

If the child becomes drowsy, or have a tendency to coma, much benefit will be derived from shaving the head, and applying a small blister to the scalp. Affections of other organs, supervening on bowel complaints, must be treated promptly on general principles.

* Such as the following: R. Saponis, ʒi; Empl. Lytharg. ʒvi; Ext. Cicuta, ʒii; Ol. menth. pip. ʒss; Fiat empl. Or R Empl. resinos, ʒvi, pulv. opii ʒi. Camph. ʒii; Ol. Juniper. ʒss; Fiat empl. Or if there be much spasm, we may use the Empl. assafœtida, Pharm. Edin. with the addition of opium.

CHAPTER XIII.

Of Costiveness.

COSTIVENESS is natural to some children, acquired by others. In the former case, it will often be found that the mother is of the same habit, and, in these circumstances, we find that less detriment accrues than in the other; yet even here it is necessary to prevent the costiveness from increasing, as it may excite not only colic, but more serious diseases, such as convulsions, or diseases in the bowels. Some children, of a very irritable habit, have the rectum spasmodically affected at times, on passing the fæces, which may be followed by a convulsion. This being frequently repeated, the child becomes afraid to go to stool, and retains the fæces as long as possible, which induces a costive state. Sometimes the terror is so great, that the child can only be made to pass the fæces when half asleep.

In hereditary costiveness, it is difficult, if not impossible, to induce a regular state of the bowels; and perhaps in some cases, this, if it could be done, would, seeing that it is not natural to the constitution, be injurious to the child. But we must beware, lest by indulgence this habit increase. Acquired costiveness may be overcome by medicine, and encouraging regular attempts to procure a stool. A variety of means have been employed in these cases, such as suppositories, magnesia, and other laxatives. The best remedy for changing the state of the bowels seems to be calomel, which may be given in a suitable dose, even to an infant, for a day or two in succession, and then omitted, employing in the meantime a little manna, alone, or combined with castor oil, and sometimes, magnesia may be substituted for a change.

CHAPTER XIV.

Of Colic.

COLIC is a frequent complaint with children, especially when they are costive. It makes its attack suddenly, and is known by violent screaming, induced without any warning, and accompanied with hardness of the abdominal muscles, kicking, and drawing up of the legs, and often suppression of urine. These symptoms are soon removed by a clyster or suppository, which brings away both fæces and wind. The warm bath, fomentations, and frictions on the belly with anodyne balsam or laudanum, will be serviceable; and if the pain continues, one or two drops of tincture of opium, or a rather larger dose of tincture of hyocyamus, with oil of anise, may be given.^(u)



CHAPTER XV.

Of Marasmus.

CONNECTED with, and generally dependent on, a morbid state of the bowels, is the marasmus, or wasting of children. This disease is preceded and accompanied by costiveness, sometimes alternated with a diarrhœa, in which the stools are fœtid, or unnatural in appearance. It begins with lassitude and debility, loss of appetite or depraved appetite, fœtid breath and fœtid stools, tumid belly, pale leucoplegmic countenance, with swelling of the upper lip. Presently fever supervenes, the countenance becomes at times flushed,

(u) The anodyne mineral liquor of Hoffman, is an excellent medicine in these affections. ED.

and the skin hot and dry, with frequent pulse, thirst, restlessness, picking of the nose, and disturbed sleep, in which the patient grinds his teeth and starts. The debility gradually increases, and if relief be not procured, death, preceded by great emaciation, takes place. This disease is most frequent with those who are fed on improper food, or eat many raw roots or much unripe fruit; or those who have the digestive faculty impaired by confinement, bad air, or neglect of the bowels. It very often is considered as produced by worms; but these, although they may often exist in the bowels, are by no means essential to the disease.

This disease may, in the commencement, and before the appearance of fever, be arrested by a course of calomel purges, given at proper intervals; at the same time that we give light nourishing diet, and inculcate the necessity of exercise in the open air. In the febrile stage, the cure is more difficult, but is to be accomplished on a similar principle, by attending to the state of the bowels. For this purpose, purgatives must be frequently repeated, especially calomel; and here it is necessary to remark, that the stools are not always hard; they are often fluid, but generally fœtid, and dark in the colour. A course of purgatives, however, by degrees procures discharge of fæces of natural appearance. Whilst this course is conducting, the strength is to be supported by proper diet, and the prudent use of wine. The power of the stomach may be increased by chalybeates or other tonics, provided these are not nauseated by the patient. After recovery has taken place, we must, by very gentle laxatives, preserve an open state of the bowels, which will prevent a relapse. Sea bathing is likewise of advantage.

The state of the bowels which gives rise to marasmus, sometimes produces speedily more acute symptoms. These constitute a very frequent species of fever, which we shall afterwards consider.

CHAPTER XVI.

Of Tabes Mesenterica.

TABES mesenterica, or hectic from disease of the mesenteric glands, is a very frequent disease. It is not often met with before the time of weaning, nor after puberty, seldom after the age of eight or ten years. The disease consists in enlargement of the mesenteric glands,* which are sometimes universally affected, but are especially enlarged into a hard mass about the root of the mesentery. These tend slowly to the formation of a cheesy substance, but death may take place before that process be accomplished. The commencement of the disease is slow and obscure; the patient complains of little or no pain, but is subject to an irregular state of the bowels; is either costive, or passes dark loose fæces; is unhealthy in his appearance, and liable to occasional attacks of fever. The appetite is not much diminished, and digestion goes on; but the belly is hard, and somewhat tumid. This is the incipient stage, and resembles very much that of marasmus, proceeding from affection of the bowels, independent of diseased glands. As the disease advances, the body wastes away, the face is pale, and the features become sharp, the abdomen gradually enlarges more, and the patient complains of lancinating pains, of short duration however, within the belly, or near the back. The stools are now sometimes bound, but oftener loose, frothy, and mixed with bile; occasionally the patient has diarrhœa, with vomiting. The fever, which at first is obscure and intermitting, becomes more acute and distinct, with exacerba-

* This state is sometimes accompanied with swelling of the thymus gland, and the lymphatic glands of the neck. Swelling of the thymus gland, by pressing on the trachia and œsophagus, produces difficulty of breathing and of swallowing, and sometimes suffocation. By pressing on the subclavian vein, it obstructs the passage of the chyle, and may thus excite disease in the mesenteric glands. Blisters applied to the top of the sternum sometimes do good.

tion in the evening, attended with restlessness and acceleration of the pulse, which rises to 120 strokes in a minute, or even more. The patient is listless, and his mind becomes gradually inactive, though he does not lose hopes of recovery. The tongue is generally clean, but sometimes covered with a white or brown crust, especially in the middle; and in an advanced stage, the whole mouth and throat become aphthous. The thirst is trifling, but the appetite is usually impaired, and a short cough supervenes. As the disease proceeds, the emaciation of the body increases, the eyes are sunk and glossy, the nose sharp, and apparently elongated, the face sallow, but the lips are sometimes florid, and the cheeks flushed at night. The abdomen is hard, and sounds like a drum, when struck upon, or if not very tense, knots may sometimes be felt within it.* The urine is lessened in quantity, and it often deposits a white or lateritious sediment, the feet swell, and during sleep, the forehead, scalp, and sometimes the breast, are covered with a profuse sweat, whilst the rest of the skin is hard and dry. The progress of this disease is not always alike rapid. In some cases, the patient lives for a year or two in bad health; but in general, after hectic has appeared, a few months, sometimes a few weeks, cut him off.

In the commencement of this disease, the steady and repeated use of purges of calomel, conjoined with some light bitter infusion, decoction of bark, or tonic medicines, would appear to be of more service than any other plan of treatment. It has been proposed to give calomel in small doses, as a mercurial; but it does not appear to have great efficacy, and is chiefly of use, in so far as it acts as a gentle purgative. Copious evacuations in this disease are not required. It is sufficient that the bowels be brought into, and kept in a regular state, which, in the incipient stage at least, sometimes requires pretty strong doses. But in the confirmed and advan-

* Sometimes a hard tumour may be felt within the belly, pretty early in the disease. It is often felt in the right side, near the origin of the colon.

ced stage, stools are easily obtained; and from the loose state of the bowels which often prevails, it comes to be a question, how far laxatives are proper. Upon this important subject, I observe, that these medicines ought not to be severe, but gentle, and given frequently, provided they have the effect of diminishing the tumour of the belly, making the stools more natural, and do not impair the strength. The lax stools which take place in this disease spontaneously, never abate the tumefaction; but a gentle course of laxatives often does, and this is a most favourable effect. Farther, if the paroxysms of fever be severe, and early in their appearance, we find it necessary to use purgatives more freely than in opposite circumstances; evacuation by stool being in such cases advantageous. In the confirmed and advanced stage, it is sufficient that such a dose of calomel be given every night, or every second or third night, as shall keep the bowels open if disposed to be costive, or, if loose, to make the stools more natural in their appearance than they would be without the administration of medicine. We must, however, take care, that the mercury do not excite much effect on the constitution, lest debility be increased; it is therefore prudent, sometimes to combine the calomel with rhubarb, or to employ a little castor oil emulsion. Along with this plan, we may, in every stage of the disease, derive advantage from the use of tonic medicines, such as bitters and chalybeates, especially in the form of mineral waters. But the last are to be used cautiously, if there be marks of inflammation existing in the glands; and in such cases, some light bitter infusion is preferable to chalybeates. In such circumstances, the laxatives are to be used more freely, the tepid bath is to be employed, and the belly rubbed freely with anodyne balsam. Gentle exercise in the open air is of great service, and it is useful in the early part of the disease to reside near the sea; but if the glands seem to be in a state of inflammation, discovered by shooting pains with fever, the patient must not bathe; and indeed, at all times, the utility and safety of the cold bath seems to be doubtful, except when the disease is so far removed, that we have chiefly to contend with de-

bility. The diet should be light and nutritious, but all stimulating and indigestible substances must be avoided. If an inflammatory state exist, milk in different forms, soft boiled eggs, and vegetables, are proper. If no inflammation be present, some animal food will be of service; nay, as in other scrofulous affections, a very considerable proportion of animal diet is sometimes beneficial, in preventing the tumour from inflaming and forming a cheesy substance, or in giving a favourable turn to the action, when the acute state of inflammation has abated, in those cases where it is met with, for it is by no means a universal occurrence.

In the latter end of the disease, little can be done except palliating symptoms, and supporting the strength by soups and a little wine. Diarrhœa should be restrained by anodyne clysters.

Cicuta, burnt sponge, and some other medicines, have been advised in this disease, but I cannot say that they have been employed with advantage. Electricity is sometimes of service.

CHAPTER XVII.

Of Worms.

WORMS exist in the bowels, perhaps, of every child,* but especially in those whose bowels are debilitated by bad management, or by acute disease; and hence, in the end of disease, or after recovering from such illness, worms are often expelled, both by children and adults. Worms are of different kinds, but infants are chiefly infested with lumbrici and ascarides, the teniæ being rarely met with until children are six or seven years old. We also sometimes meet with some uncommon species of worm, which are ejected by vomiting, and some lususes have been passed

* Worms rarely appear in the bowels, till after the child is weaned.

by stool; thus, for instance, I have seen a worm about three inches long, having two large flat heads, with two bodies, separated for a little, and then united in a common trunk, ending in a tapering tail. Insects of different kinds may also be introduced accidentally into the stomach and bowels, and live there for some time.

Ascarides generally occupy the rectum, producing much itching in that part, so that sleep is often prevented. The irritation causes indigestion and pain in the belly, with picking of the nose and white face, a variable appetite, and sometimes a desire for indigestible substances. The worms are discovered in the stools like small white threads, and occasionally they creep out from the rectum. The stools are often slimy or mucous. This kind of worms is removed by injections of aloes mixed with water; lime water and olive oil also sometimes destroy them, but cannot be depended on. Calomel purges are proper likewise; and any disordered state of the alimentary canal, which exists, is to be treated on general principles.

The *ascaris lumbricoides* is often from six to ten inches long. In its general appearance it resembles the earth worm, but differs from it, in having, besides other distinctions, a longitudinal line on each side, whereas the earth worm has three lines on the upper surface. It dies soon after its expulsion, but when alive, it moves like an eel, and does not shorten the body like a worm. (x) *Lumbrici* may exist in every part of the alimentary canal, and frequently are ejected by vomiting, as well as by stool. The symptoms are those of intestinal irritation,† pains in the belly, frequent attacks of

(x) Dr. Hooper, in the 5th vol. of the *Mem. of Med. Soc.* has a valuable paper on intestinal worms. ED.

† Hence it is not easy to say that worms are the cause of a child's complaint, for other morbid affections of the bowels produce the same symptoms. A course of purging removes these symptoms, without bringing away any worms; although the slimy appearance of the stools is often attributed to the worms being dissolved.

diarrhœa, variable, and often voracious appetite, the child sometimes becoming hungry, almost immediately after having ate heartily, fœtid breath, pale complexion, tumor of the lips, with livid circle round the eyes, swelling of the belly at night, and disturbed sleep, the child sometimes awaking in a great terror, and being liable to starting and grinding of the teeth. When awake, he picks his nose, is plagued with temporary head-ach, sometimes has a dry cough, with slow fever, or convulsive affections. I have already pointed out several diseases proceeding from disorder of the bowels, and these may arise from worms, in as much as they are capable of irritating the bowels, or injuring their action, or increasing such a debilitated state, as may have predisposed to their accumulation. A variety of anthelmintics have been advised, for an account of which, I refer to the writers on the *Materia Medica*. Sulphur, tansy, aloes, spigelia marylandica, dolichus pruriens, the geoffrea, worm seed, tin powder, filings of steel, &c. have all at times a good effect; but in general, calomel purges given repeatedly and liberally, provided the constitution of the patient will bear them, will be found very effectual; or these may be alternated with saline purgatives, or suitable doses of jalap. In obstinate cases, much benefit will be derived, by giving a regular course of purgatives, so as to keep up a constant but gentle effect on the bowels. After the worms are expelled, a bitter infusion, or chalybeate water, will be useful to strengthen the bowels, or these may even be employed whilst we are using the purgatives.

The trichuris, or long thread worm, is about two inches long, and two-thirds of this forms a tail like a hair. The body is about the sixteenth of an inch thick, and the worm is white like the ascaris. It is found in the rectum, and also higher up, even in the ilium.

The tænia consists of many flat jointed portions, and is divided into the *T. Solium*, where the orifices are placed on the margins of the joints, and the *T. Lata*, where they are

found in the surface. The usual symptoms, are produced, and the usual remedies are required; but the tænia is more difficult to be removed than other worms. (*y*)

CHAPTER XVIII.

Of Jaundice.

THE jaundice of infants is a disease attended with great danger, especially if it appear very soon after birth, and the stools evince a deficiency of bile; for we have then reason to apprehend some incurable state of the biliary apparatus. I conceive that there are two species of this disease, which are very opposite in their nature. In the first, there is an obstacle to the passage of the bile into the intestine, the child is costive, and the meconium is paler than usual, and after it is removed, the stools become light coloured; the skin, very early after birth, becomes of a deep yellow colour, which extends to the eyes. The child sucks very little, has occasionally a difficulty in swallowing, is languid, becomes emaciated, moans much, is troubled with flatulence, sometimes with cough and phlegm in the trachea, or vomiting, and fever occasionally supervenes. In some cases, the liver is felt enlarged, and the hypochondrium is tumid. The water is very high coloured. This disease often proves fatal in a week, but it has been known to continue in variable degrees of violence for a considerable time, and at last to disappear, though such children continue long delicate. With regard to the cause of this disease, we find that sometimes it

(*y*) The oil of worm seed has recently been given with great success in cases of worms. I am told that it is equally destructive of every species. I have, however, only used it in one case of the lumbricoides. For a child of a year old the dose is three, or four drops twice a day. It is a remedy singularly prompt and efficacious. After continuing the medicine for three days, it should be omitted, and a mercurial purge given. ED.

consists in obstruction of the hepatic duct, or ductus communis, either by thickening of the coats, or pressure, in consequence of enlargement of some part in the vicinity of the duct, or it may consist in imperforation of the duct. Sometimes it proceeds from temporary obstruction in the duct, owing to viscosity of the bile. Now some of these cases are irremovable, others are not; but as we cannot *a priori* say what the cause may be, in any particular instance, we must use the means of cure in every case. The most likely remedies for removing this disease, are gentle emetics, given very early, and followed by the exhibition of half a grain of calomel, morning and evening, till the bowels are acted on; or we may give this medicine even three times a day, in some cases; but we must be cautious not to induce much purging, or push the mercury far, lest we bring on fits.

The second species differs from the first, in the stools being dark coloured or green, showing that there is no obstruction, or at least no permanent obstruction, to the passage of the bile.* Like the first species, it appears soon after birth, and is accompanied with oppression, moaning, &c. It is attended with much danger, and frequently carries off the infant in a few days. The early use of calomel would appear to be the most proper practice, and the strength must be supported in all those cases by the breast milk, given with the spoon if the child won't suck, and small doses of white-wine whey.

Jaundice, appearing at a considerable period after birth, does not require a separate consideration here, nor is it a very common occurrence.

* It is in this species alone that the opinion can be admitted, that infantile jaundice depends on absorption of bile from the intestines.

CHAPTER XIX.

Of Diseased Liver.

ENLARGEMENT and inflammation of the liver are not uncommon in infancy and childhood, but the first is most common in infancy. It is productive of vomiting, oppressed breathing, cough, fever, and sometimes purging. The liver can be felt enlarged, and extending lower down than it ought to do, which will distinguish this complaint from inflammation of the lungs, which is also not attended in general with vomiting.* I cannot say much that will be satisfactory respecting the treatment. Mercurial frictions are chiefly to be relied on. (z)

Hepatitis in infancy, is marked with the symptoms attending enlargement of the liver, but there is more fever, and sometimes pain, when the liver is pressed on. In childhood, we can get an account of the patient's sensations, and find that the disease often begins with symptoms of disordered stomach, and pain in the belly. Fever soon comes on, preceded by chillness, and attended with pain in the right side, stretching to the shoulder, and accompanied with cough, which is sometimes soon succeeded by jaundice. The stools are often like yolk of egg, or, if there be obstruction to the passage of the bile, they are clay coloured, and the urine red, with much sediment. On inspecting the body of infants who have died of this disease, the surface of the liver, sometimes only its convex surface, is often found of a deep red colour, with an exudation of white lymph,

* On examining the liver, it is sometimes found soft, and not much altered in structure, sometimes hard, and almost cartilaginous, with the pori biliari hardened and obstructed, so that secretion of bile does not take place, and the gall bladder becomes shrivelled. This state cannot be attended with jaundice.

(z) Active mercurial purges I have found useful in this stage of the disease, after which, small doses of calomel should be given morning and evening for some weeks. If there be pain, leeches should be applied to the side. E n.

exactly resembling the cuticle of a blistered part. Betwixt the liver and diaphragm, we find white flaky fluid, something like pus, and similar matter is often found among the bowels, mixed with pieces of fatty-looking lymph. The liver is not necessarily enlarged, nor its substance affected. The stomach and bowels are not inflamed, but sometimes have a white blanched appearance, and contain a fluid like thin custard. The bile is not changed in its colour. In some instances of chronic inflammation, the liver is somewhat enlarged, of a dark colour, and the veins turgid. If mercurial frictions, or the use of nitrous acid, and application of blisters on the side, are not early resorted to, or do not arrest the disease, it proceeds to the formation of abscess, attended with irregular chilliness, hectic symptoms, and much pink coloured sediment in the urine. In a few weeks, sometimes in a shorter period, a smell like rotten eggs is emitted with the breath, then a little fœtid matter is coughed up, which is followed by copious expectoration, or pus is ejected, as if vomited from the stomach. The cough and spitting, with hectic symptoms continue long, but at last decline and go off. In the suppurating stage, mercury should not be used, but the strength is to be supported by proper diet. In the expectorating stage, the same plan is necessary, with the use of tonics, such as chalybeates joined with myrrh, and occasionally opiates. A speedy removal to the country, if the weather be mild, is advantageous. Sometimes the abscess bursts into the stomach or intestines, adhesion previously taking place; or, I have known it burst into the general cavity of the abdomen, and the matter accumulate there, forming a tumor like ascites, bursting at last by the navel, which inflamed; or it has been drawn off with a trocar, and recovery has been accomplished.

The spleen is frequently enlarged, and sometimes contains tubercles. I do not know any other diagnostic symptoms, than the belly being tumid and hard in the region of the spleen; frequently a cough attends this state. Mercurial laxatives, and electricity, are the best remedies.(a)

(a) I pursue here the same mode of treatment as in enlargement of the

CHAPTER XX.

Of Fever.

Fever is a frequent disease in infancy and childhood, but it is generally symptomatic, or produced by some local irritation. Typhus fever is extremely rare in infancy, but it sometimes is communicated to children a few years old. It is known by our evidently tracing the channel of infection. (b) The child at first is languid, pale, chilly, and debilitated, the appetite is lost, the head becomes painful, the skin hot, the tongue foul, and the pulse very quick; and if a favourable crisis be not procured, great oppression, succeeded by stupor, precedes death. In the course of the disease, the bowels are generally bound, the stools fœtid, and the urine thick. It requires the early use of emetics in the cold stage, succeeded by saline julap. If the hot stage, however, be fully established, and the heat considerable, the cold affusion will be of advantage, succeeded by calomel purges and saline julap, with light diet, and the use of ripe fruit. A free circulation of air is of essential benefit. The skin, in the course of the disease, especially among the poor, should be sponged daily with tepid water, and the bed-clothes, if possible, changed frequently. If the head be very painful in the first stage, the application of leeches to the forehead, and the use of laxatives, will be useful. If pain continue, or stupor or constant drowsiness supervene, blisters will be proper. The strength, in the latter end of the disease, is to be supported by the prudent use of wine. Cough in general requires blisters to the breast, with squill vinegar.

The most frequent fever, however, excluding those accompanied with eruptions, is the fever from irritation, which, al-

liver. Exercise, and especially swinging, is useful. Compression of the abdomen by a flannel bandage is also beneficial. ED.

(b) Many of the fevers of children, not at all originating in contagion, soon run into the typhus form. This, therefore, can hardly be considered as a diagnostic. ED.

though it may proceed from various causes, is essentially the same in its nature, and the indications of cure. It has of late years been described under the name of the infantile remittent fever, though the fever so described belongs to childhood, rather than infancy. It will be useful to divide the fever, at present to be considered, into that variety which occurs in early infancy, and that which takes place in childhood. With regard to the description of the first variety, it is very similar to the early stage of hydrocephalus, but the remissions are more distinct in the morning, and the exacerbations greater in the evening. The pulse is very quick*, the skin hot, the mouth warmer than usual. The child is at first fretful, restless, costive, and inclined to vomit; then he becomes more oppressed, perhaps; does not for hours lift his eyes, till the remission comes, when he looks up, and attends to the objects presented to him for a short time. He sucks in general freely, and sometimes bites the nipple, and very often aphthæ appear in the mouth. The bowels are irregular, but whether the stools be frequent or seldom, they are generally green. The urine is usually high coloured and scanty, and sometimes the feet swell a little, and very often become cold. If the disease prove fatal, it is generally attended, in the end, with symptoms of effusion into the ventricles of the brain, or the infant is exhausted gradually by the continuance of the fever, or more quickly by the accession of obstinate diarrhœa. A favourable change takes place, sometimes about the fifth day, sometimes later, the child looking up for a longer space of time than formerly, and seeming more free from sickness. After this, the symptoms subside, and the strength is gradually restored. It is very common to find, at this time, that one or more teeth have made their appearance. In many cases, the fever may proceed from affection of the bowels; but in general it is caused by dentition, the irritation in the jaw operating either alone, or in connexion with a morbid state of the bowels. In this kind of fever, the gums should be carefully inspected, and, if necessary, cut. Small

* In the early stage of hydrocephalus, the pulse is more irregular, and often beats alternately quick and slow, for two or three pulsations.

doses of calomel should be given morning and evening, mixed with magnesia, to prevent costiveness, or evacuate irritating fæces. A few drops of tincture of hyoscyamus, with a saline julap, may be given occasionally to abate irritation. The tepid bath should be employed once a-day, when the exacerbation takes place, and the strength supported by the breast milk or beef tea. If the child be plethoric, leeches should be early applied on the forehead; and if a favourable crisis do not soon take place, the head ought to be blistered.

The remittent fever of older children is met with from the age of two to ten or twelve years, and is generally found to be produced, either speedily after eating some improper substances which have not been immediately removed from the stomach or bowels, or gradually by the induction of a costive state, or the accumulation of irritating fæces in the bowels. In the first case, the fever attacks suddenly, generally at night, and the child is sick, very restless, extremely hot, disturbed in the sleep, and thirsty. Sometimes he vomits, or complains of pain in the belly. The tongue is at this time tolerably clean. If this disease be attacked immediately with an emetic, followed in the morning with a smart purge, the health is soon restored; but if the remedies be delayed till the next day, I have generally found, that although the emetic, with purging, mitigates the disease, it does not arrest it speedily, but, notwithstanding the regular use of laxatives with diaphoretics, it continues for two or three days. Emetics and purgatives, in this disease, generally bring off some half-digested substances, such as almonds, orange peel, &c.

In the second case,* the attack is often more gradual, the child being for several days somewhat feverish and unwell. The pulse is frequent, and, in the course of the day, he has several attacks of feverishness, during which he is dull, and disposed to sleep or lie down; but these do not last very long, and in the interval he seems tolerably well, but is easily put out of temper. The appetite is not steady, he has little thirst,

* This is commonly called a worm fever, although worms are not necessarily passed in this disease.

and the tongue is clean. The bowels are sometimes very open, but oftener bound. These symptoms appear more or less distinctly for about a week, though sometimes not so long. Then an acute paroxysm of fever takes place, preceded by shivering, and attended generally by vomiting. The pulse becomes much more frequent, sometimes 140 in a minute. The cheeks are flushed, and the patient is very drowsy, but complains of little pain in the head, or indeed any where. The fever does not continue alike severe during the whole of the day; it remits a little, but not at very regular hours. The exacerbation is generally accompanied with drowsiness. Very soon after the attack of fever, the tongue becomes covered with a white or brown coat, and both the stomach and bowels seem to be extremely torpid. The appetite, indeed, is soon almost totally lost, or the food which is taken is not digested. The bowels are generally, but not always costive; and the stools are fœtid, dark coloured, sometimes like pitch, or thin and olive coloured, or green and curdy-looking. There is a great desire to pick the nose and lips, and if the child be not watched, sometimes an ulcer is thus produced upon the lips or angle of the mouth.

The face is occasionally flushed, and the eyes suffused; or it is pale, and the eyes dull and white. Generally delirium occurs in the course of the disease, and in some cases it is difficult to keep the child in bed. From this state, however, he can usually be recalled for a few minutes, and will then answer questions distinctly. In some instances convulsions have taken place, but these are rare, and are chiefly met with in young children. Sometimes the stools are passed in bed, without any intimation being given. This disease runs on for a week or two, or even for several weeks, and may at last destroy the patient by debility; an event which will take place earlier, if the proper remedies be not employed, than if they be, even although they may ultimately fail. In general, success attends their use. Tumefaction of the belly, with great and constant fever, are very unfavourable.

This fever bears a very considerable resemblance to hydro-

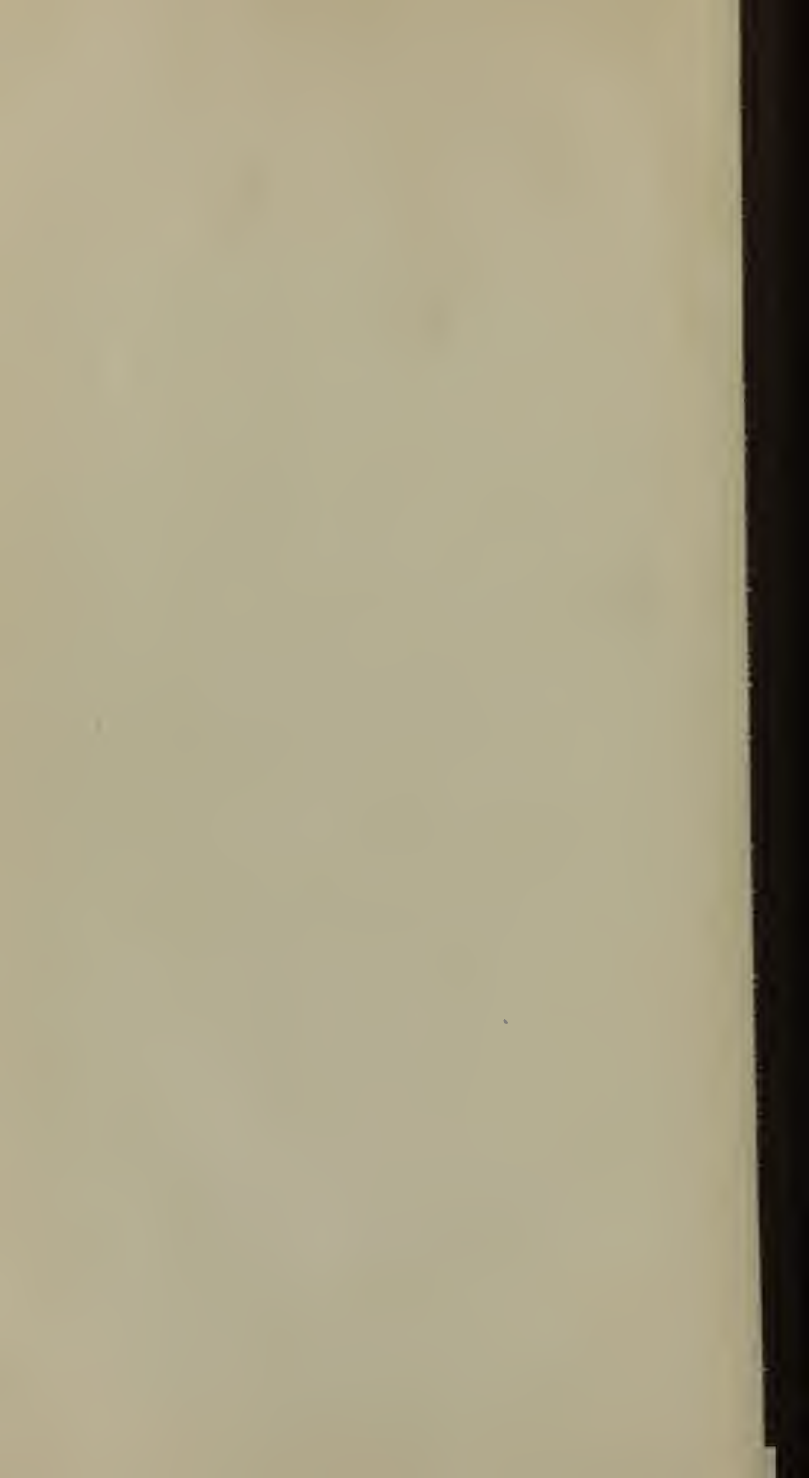
cephalus, especially to the first stage of that disease. But in hydrocephalus there is a more frequent vomiting, and as often a tossing of the hands above the head, as picking of the nose or lips. There is pain of the head, which is wanting or trifling in this fever. There is screaming and strabismus, and often a more constant delirium, from which the patient cannot be roused, after it has continued for some time; and convulsions are accompanied with great injury of the mental faculties. The stools are more fœtid and darker in this fever than in hydrocephalus, in which they are often thin and bilious, and sometimes glossy. The pulse in hydrocephalus is more irregular, and, in the second stage, usually becomes slow and intermittent.

It is generally proper to begin the treatment of this disease, on its first attack, with an emetic, which is to be followed by a purgative. In some cases, the usual dose of the purgative will prove effectual, but oftener a much larger quantity must be given. It is useful to evacuate the bowels freely at first, but after this, it is not proper to give so much medicine as will purge briskly.* It is requisite, however, to give regularly such doses as will keep the bowels open, and support their action. When the stools are loose, purgatives are still proper in small doses to evacuate them, for they are not natural in their appearance, and injure the action of the intestines. Small doses of calomel, or castor oil emulsion, or infusion of senna, will presently bring the stools into a more natural state. This is a very important part of our practice, but not the whole of it, for we know well, that removing the cause of fever does not always remove the fever itself. We should therefore, besides using laxatives, employ, in the early stage, saline julap, with a little antimonial wine, and, in the more advanced stage, support the strength with regular and cautiously proportioned doses of wine. Opium and hyoscy-

* Dr. Pemberton judiciously remarks, that if strong purges are given, the intestines are apt to become distended with air, and the patient is destroyed with tympanites. Practical Treatise, &c. p. 165. It is worthy of remark, that dissection often discovers nothing but great inflation of the intestines.

mus frequently allay irritation, and accelerate recovery, by procuring sleep. Decoction of bark, or of cascarilla, with aromatics, is also useful. Delirium is sometimes, but not always, mitigated by blistering the head. Shaving the head, and washing it with vinegar, has also a good effect. The diet should be light, but it is not proper to force the patient to eat. Great attention should be paid to cleanliness and ventilation, and, when convalescent, a removal to the country is highly useful.

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